

SEASEP

SOUTH EAST ASIA SKILLS ENHANCEMENT PROGRAMME

GATEWAY REPORT PHASE 1



Lloyd's Register
Foundation

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EXECUTIVE SUMMARY

BACKGROUND

It has been estimated that there are 340 million workplace accidents per year globally. Asian countries' construction industries account for a disproportionately high number of both non-fatal and fatal incidents.

The rapid expansion of SE Asian economies and populations is fuelling massive infrastructure spending across the region and consequently construction work is booming. Furthermore, this convulsive increase will drive the region's recovery from the Covid-19 downturn. Unchecked, a major increase in workplace accidents will result, dramatically worsening an already grave situation.

Long-held and endemic high rates of construction industry fatalities, combined with what will almost certainly result from the increase in construction projects across SE Asia sets both the context and need for the South East Asia Skills Enhancement Programme (SEASEP) programme.

The International Labour Organisation (ILO), has identified three direct causes of accidental workplace deaths:

- Poor or no safety culture
- Lack of research into health and safety due to poor data available
- Absence of effective health and safety training.

Phase 1 of SEASEP is a joint project between Lloyd's Register Foundation (LRF) and TWI to train 4,000 candidates on safety related skills across two countries (India and Indonesia) in alignment with the wider Lloyd's Register Foundation strategy to 'improve engineering skills where they are most needed', in particular where critical infrastructure growth is out pacing the skill sets required to build and maintain these structures safely. Leading to higher than normal fatality rates.

Whilst there are other organisations that deliver similar types of engineering inspection training allied to certification bodies within both India and Indonesia, TWI is extremely well placed within the regions and has the course portfolio to add weight to the initiative and aims of SEASEP. TWI is unique within the market due to its control mechanisms of examinations and certification through its own certification body CSWIP, which has over 50 years of experience delivering certification internationally. Its certification programme is well established, and includes permanent offices and training facilities in various in South East Asia locations, but maintains the ability to travel to sites to administer training and examinations. Additionally, CSWIP certification is often a requirement to gain employment within South East Asia within the inspection industry which gives it the edge over many other certification schemes. It currently

trains and certifies 20,000 students per annum globally within the inspection industry.

Phase 1 was originally planned to run from October 2018 to January 2021, but was extended by a further year due to delays resulting from the Covid-19 pandemic.

This Gateway report reflects the progress to date against the original project objectives, and evaluates the outcomes and impact of the Phase 1 activities.

Objectives

SEASEP aims to make a significant contribution to the reduction of high rates of accidental workplace fatalities in South East Asian countries by:

- Developing a sustainable programme that builds capability and capacity to safely operate and maintain critical infrastructure, and
- Enhancing the skills of the workforce by providing access to quality, engineering-related training and education.

Outcomes and Impacts

The outcomes and intended impacts of SEASEP can be summarised as follows.

Societal impact

Improved safety of physical assets

The SEASEP courses are designed to improve skills and reduce occupational fatalities by bringing engineering-related skills and education to disadvantaged and under-represented groups. Training in disciplines such as inspection and safety related courses, in accordance with international standards will enable buildings, bridges, pressure vessels,



pipelines etc. to be built and operated more safely throughout their service life.

Fewer people being harmed

SEASEP certification ensures that certificate holders understand and adhere to globally recognised safety standards. Both trainees and employers reported positive improvements in safety standards (e.g. correct usage of Personal Protective Equipment) as a result of the SEASEP training.

Competence & alignment resulting in increased safety awareness

“After I completed this course [IOSH Managing safely certificate,], I learnt how to...manage health and safety in my work environment [which is] very high risk. Holding a recognised certificate [helps] my colleagues to [be] more confident in me because they know I... have the knowledge. ...after I learned IOSH Managing Safely...I have become more careful about...my own safety...[and everyone else's] too.”

Fawwaz Kemal Zulfikar,
SEASEP student



Alignment with international standards

Employer feedback

“SEASEP...has changed our working practices. We have...introduced a 2-stage inspection system that takes place in both the welding section and the painting section. [This] ensures...defects get reported and rectified at source.”

From TKI (Toyo Kanetsu), Indonesia



Alignment with international standards

Employer feedback

“Our engineers have given testimony on how the [SEASEP] course helped them to better identify welding defects. This will help us to educate the people working with us which will ultimately save lives by working to international safety standard guidelines.”

Cameron Schlumberger, Batam,
Indonesia

Proportion of female trainees

Female participation was actively encouraged and there is positive feedback on how this is helping career progression. To encourage female SEASEP participants, females were supported by 100% bursary. Both mixed and all female classes were made available and were widely advertised. As of April 2021, 5.5% of SEASEP trainees were women.

Increasing female participation in engineering



“I took CSWIP 3.0 as introduction to my welding inspection knowledge and, since I’ve found this training very beneficial to my career, I am planning to continue to higher level courses to completely achieve my goal.”

Vivien Diawan, SEASEP student



“...the training provided [me] with a great opportunity to improve [my] knowledge of welding inspection, which [I] can apply in [my] job as a developer of Indonesian Ship Standards. The training will also help [me] to improve the level of safety awareness at [my] work.”

Vina Nanda Garajati, SEASEP student



“...welding inspection is a difficult area for women to get into. However, [I] was inspired to challenge myself by taking up the training with TWI and getting a globally recognised CSWIP certificate so [I] can further [my] opportunities in... industry.”

Candra Retnaning Ayu, SEASEP student



Capability

Impact on individuals

Responses to the post-course surveys show that, in most cases, the courses related directly to the respondent's employment. In general, the SEASEP trainees rated the courses highly in terms of their impact on their future employment prospects, and 3 out of 10 trainees who were previously unemployed have already found work related to the course they attended. 83% of respondents said they were willing to feature in SEASEP case studies to help promote the programme in future. Many have moved onto the next level of inspection engineering courses since the start of SEASEP.

Capacity building

Almost 3700 students will have completed their initial examination on completion of Phase 1 with over a further 1000 students given further training and a retest after failing to pass first time.

Credibility

Leverage

Leveraged funding has been difficult to secure due to Covid-19. However, both India and Indonesia are currently in negotiation concerning programmes beyond foundation funding. However, the internationally recognised courses have sparked much interest and many students and companies are returning students for further courses at their own costs.



Top-right photo: Indonesian Vocational Educational & Training Summit- SEASEP Message delivered by Neil Harrap attended by several hundred delegates.. Bottom-right photo: British Embassy (Indonesia) - SEASEP Message delivered by Abbas Mohimi



Photos: Mixed SEASEP Class taking place in India



Programme sustainability

Career progression

Over 100 SEASEP students in Indonesia alone who successfully completed CSWIP 3.0 training through the programme have self-funded or gained employer sponsorship to take the next step in their career development by enrolling on the higher level CSWIP 3.1 course.

Programme sustainability

Free access to selected training materials

TWI will continue to offer access to its online virtual academy for courses delivered under SEASEP free of charge, the hours of study will be accredited to the training hours required, therefore requiring less in- class time which will reduce the costs of the course price for students.





Photo: TWI's Husni Athaillah delivers the SEASEP message and signs an agreement with the Ministry of Manpower to carry out a welder 'train the trainer' programme with the East Java Vice president for 15 candidates at their Serang Vocational Training facility in Indonesia.

Publications / presentations

TWI has made over 40 presentations in India and Indonesia to promote SEASEP and its objectives.

TWI also undertook additional meetings with the National Thermal Power Corporation Limited (NTPC) and the Capital Goods Skill Council of India (CGSC) and other organisations. Both expressed interest in supporting the SEASEP Programme, TWI will reinstate these discussions as covid 19 restrictions are lifted.

On-line learning

On-line resources and webinars allowed SEASEP to maintain momentum in spite of Covid-19 restrictions.

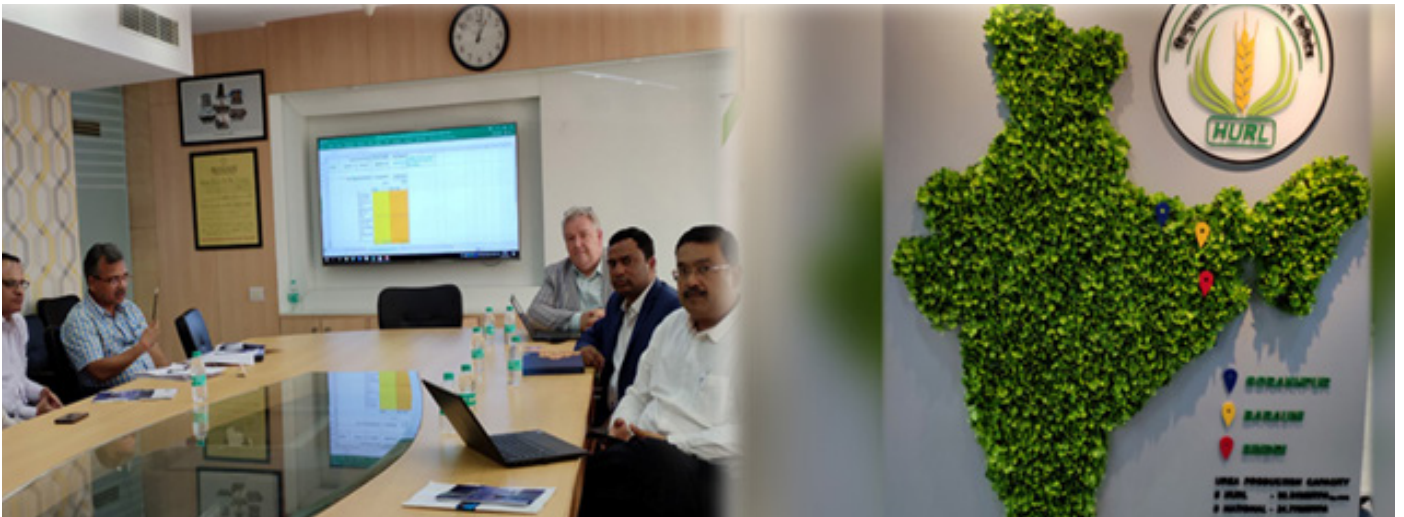
TWI has accelerated the growth of its virtual academy which hosts online training course materials to support its students. It is given free of charge as an additional support for those studying with TWI, however, all practical training associated with the courses still takes place in class. Many students have taken advantage of this and continue to do so, it will be continually offered to SEASEP students.



Additionally, every student has access to a subject matter expert for any further guidance required.

The course material is well received by the students and is currently being expanded within the TWI virtual academy.

Photo: Meeting with the HURL committee (India) to discuss welder training – SEASEP Message delivered by Neil Harrap



Phase 1 leading to Phase 2 benefits

PHASE ONE

PHASE TWO

BENEFITS

FOR STUDENTS

- Increased salaries
- Career progression
- Networking

FOR EMPLOYERS

- Fewer LTAs and fatalities
- Upskilled workforce enables entry to new markets

FOR INDUSTRY

- Failure avoidance
- Enhanced reputation
- Diverse & resilient supply chain
- Fewer workplace fatalities
- Inward investment
- Exports

IMPACTS

- Competency Alignment with Int'l standards
- Leveraged Funding & Sustainability

Comments from TWI Employees that took an active part in SEASEP

Ernie MOSKINI
Regional Manager of TWI SEA and TWI Associate Director

Q: What do you believe were the societal impacts of SEASEP in phase 1 for;

1) Individuals

Answer: A life changing experience

2) Companies

Answer: They benefitted from the employment trained and certified personnel

3) Institutions/Governments

Answer: I believe the number of personnel trained is too low to make a significant impact at this level for Phase 1.

4) Safety Culture

Answer: Referring to the individual and his/her impact on their immediate surroundings, then I would say very substantial.

Q: How do you believe that sustainability of the project has been realised?

Answer: For those that were fortunate enough to have received the training, they will enjoy a lifetime of benefit. One of the students has become a university lecturer and as such, will pass her newly acquired knowledge onto others for many years.

Q: What do you believe could be done to improve current and future phases?

Answer: I'd like to focus future funds on training trainers,

this would be the best way of ensuring that SEASEP becomes sustainable.

Q: Where do you believe we should concentrate for phase 2 locations?

Answer: Thailand. Reasons:

1. We have an office in Thailand with staff that understand the training product.
2. TWI understands the market, we have an existing requirement for our certification – significant oil and gas industry.
3. Majority of the people have little access to internationally recognized training.

Additionally, we did so much experimentation in Indonesia and it took a long time to build awareness of the SEASEP program. Additional funding for Indonesia would be used to complete some of the unfinished projects e.g. the training of welder trainers and the certification of the student welders.

Other countries could include the Philippines, where we have strong links within TWI to the country.

I would work closely with local vocational organizations, I believe training trainers and providing funds for certification is the most sustainable SEASEP model.

Venkat Ayyala
Regional Manager (India)

Q: What do you believe were the societal impacts of SEASEP in phase 1 for?

1) Individuals

Answer: The SEASEP scheme benefited both employed and unemployed individuals; some of the pointers include:

a) Recognition of prior learning through CSWIP certification

b) Gained new employable skills and credentials that would bring them employment under secure work arrangements with the possibility of professional development and prospects of career advancement

2) Companies

Answer: Some of the small-scale industries opted to train their employees under the SEASEP scheme. One of the notable impacts was that the training bridged the knowledge gap, which improved the accuracy and quality of products/services. Plant owners appreciated the improved level of awareness among course participants, and they envisage long-term benefits of skill development training offered under SEASEP.

a) Without aid from SEASEP sponsors, these employees may not have access to quality training throughout their employment due to financial constraints, which may negatively impact business sustainability.

b) Access to a suitably skilled workforce to meet sectoral

requirements, particularly in welding and NDT

3) Institutions/Governments

Answer: Engineering colleges and Government organisations where SEASEP was conducted see value in the courses and highly appreciate Lloyds Register/TWI initiative to fund such skill development programme. As these individuals grow, society and nation also benefit from their productivity and growth. The scheme certainly has a positive impact, and however small, it contributes towards lowering the scarcity of skilled resources and reducing inequality.

4) Safety Culture

Answer: The benefits of effective safety culture are now widely acknowledged for minimising operational cost and improved efficiency in any organisation and society in general. The SEASEP programme influences some of the components of safety culture at an individual level and to some extent in participating organisations.

Q: How do you believe that sustainability of the project has been realised?

Answer: Sustainability of such projects is built over time; this is even more relevant for countries like India where only 10% (3% formal and 7% informal) of the workforce has received training compared with 68% in the UK and 96% in South Korea. However, a long-term partnership and funding support are sought for effective delivery and achieving sustainability.

Q: What do you believe could be done to improve current and future phases?

Answer: Based on the statistics from public/government documents and the fact that hundreds of millions of youth

do not have access to formal or informal skill training, we shall continue the initiative and take it to the next level of inspiring and skilling the youth according to industry need. For such a vast region with a large skill gap, project sustainability requires extending the SEASEP sponsorship to cover more candidates in all corners of the country

Q: Where do you believe we should concentrate for phase 2 locations?

Answer: We have many corners of India to spread the word about SEASEP projects, and it requires increased funding support to reach eligible candidates. Simultaneously, the project can be extended to countries like Nepal, Bangladesh, Bhutan and Sri Lanka.

Husni Athallah Marketing, Sales and Operations (Indonesia)

Q: What do you believe were the societal impacts of SEASEP in phase 1 for?

1) Individuals

Answer: having international level competencies exposed to the best training scheme. Opportunity to work overseas

2) Companies

Answer: benefitted by having skilled workforce who are trained with awareness of safety at work.

3) Institutions/Governments

Answer: Highly skilled labour at international level, so they have the opportunity to pursue their career overseas.

4) Safety Culture

Answer: Economic impact, product impact, trained personnel will work according to safety procedure will hopefully

pass his/her knowledge to other workers. Having less accident will save companies from unnecessary spending and therefore the expected output is better product.

Q: How do you believe that sustainability of the project has been realised?

Answer: The candidate will return for upskilling and will broaden their knowledge by taking supplementary courses to support their core skill

Q: What do you believe could be done to improve current and future phases?

Answer: We need to work with tertiary and vocational institutions from the early stage to supplement their curriculum or even create a new course within the institution to match the industry requirement of skilled workers.

It was very difficult to work with Government as they were generally not interested in funding this scheme; the government have the obligation to fund local schemes.

Q: Where do you believe we should concentrate for phase 2 locations?

Answer: I see that Indonesia need second phase to get bigger impact for local economy.

Kumar Annamalai
SEASEP Development/Adviser
(Indonesia)

Q: What do you believe were the societal impacts of SEASEP in phase 1 for?

1) Individuals

Answer: The scheme was an eye-opener to most of them and opened up green pastures to many students.

2) Companies

Answer: Created more skilled and safety conscious workers

3) Institutions/Governments

Answer: Able to produce internationally recognized students/workforce

4) Safety Culture

Answer: To many to mention, it created awareness in safety culture and changed the way they perceive the O&G, petrochemical, and construction sectors

Q: How do you believe that sustainability of the project has been realised?

Answer: Many more candidates believed and enrolled to participate in non-SEASEP programmes

Q: What do you believe could be done to improve current and future phases?

Answer: The scheme did not pick up initially, which took almost 1 year since the award of the bursary program, hence so much of time, effort and money were spent on creating awareness of the program, travelling, promoting, marketing, administration, and convincing the agents, the government bodies, institutions, international bodies and companies. However, once they were convinced and able to cascade the information to their peers, staffs, students,

supervisors, etc. the project just picked up real fast.

Q: Where do you believe we should concentrate for phase 2 locations?

Answer: Philippines due to the population of the country and as their workforce is well recognized worldwide. However, without proper arrangement as abovementioned points, it will need extensive market well in advance.

Summary by TWI UK SEASEP Manager, Stephen Wisniewski

With reference to the detail contained within section 5 of this report, Conclusions/Recommendations, the effect on the lives of SEASEP students has been a real highlight. Their enthusiasm and appreciation of the opportunity to either gain employment or further their careers and make a difference to inspection integrity and the health and safety culture within their companies is very encouraging and highlights a major success for the project. However, Phase 1 of the project so far, has been far from easy, the marketing and build up to reach the minimum numbers as per SEASEP objectives have been challenging but the efforts of all the regional offices to make this happen is a testimony to their commitment to SEASEP. Lessons to be learned from Phase 1 include:

- Allow the project to be over a longer period to allow for the above
- Better project evaluation
- Selection of candidate types
- Consideration of retests for candidates
- Affording more time to explore SEASEP marketing strategies, partnerships to build project sustainability.

Recommendations for Phase 2

- Target the amount of bursary based upon the working population within high accident/fatality at work countries
- Consider extending further bursary to India and Indonesia as these are in the top three most populous countries within South East Asia inclusive of China. Also give consideration to Bangladesh shipbuilding locations.
- Consider Thailand and the Philippines as originally noted in the original proposal
- Consider South Africa and Nigeria in Sub-Sahara Africa

Recommendations for improvements to the evaluation plan have been given by the 'independent evaluation of the South East Asia skills enhancement programme' produced by Technopolis. TWI are in agreement with the improvements laid out in the aforementioned report for the potential phase 2 of the project. The main tools and methodologies for improvement inclusive of the evaluation are;

- Implement baseline surveys to consider the expectations of the participants and actual impacts
- Increased efforts to collect company input on the effects of SEASEP on their Health and Safety culture
- Extend surveys to other stakeholders such as educational institutions collaborating in the project to expand on how SEASEP training impacts their activities, curriculum
- Develop more case studies around the benefit of participants in creating specific outcomes related to project objectives
- Collate and assess information on participants progression to higher level courses sponsored by themselves or other organisations

1. INTRODUCTION

The South East Asia Skills Enhancement Programme (SEASEP) Phase 1 is a joint project between both the Lloyd's Register Foundation and TWI to train 4,000 candidates on safety related skills across two countries (India and Indonesia) within originally 2 years and 4 months from the 1st October 2018 (i.e. by 31st January 2021).

Due to Covid-19 the Phase 1

due date was extended by a further year in order to allow further scholars to take part in order to capture further data to support the Gateway report.

This Gateway report is the reflection of the project status so far against the objectives set at the project initiation point.

This report highlights the status of the objectives met so far in Phase 1 of the project.

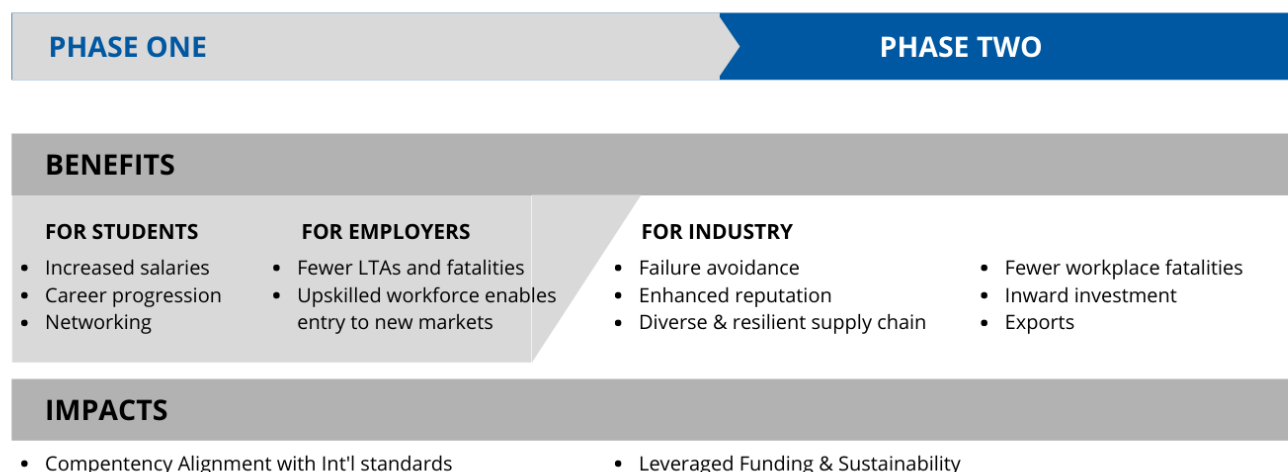


Figure 1 – SEASEP programme 2018 – 2022 outcomes and benefit

2. OBJECTIVES AND PROGRAMME CONTEXT

SEASEP's objective is to make a significant contribution to the reduction of high rates of accidental workplace fatalities in South East Asian countries (The Workplace Safety and Health Institute Singapore, 2017) by:

- Developing a sustainable programme that builds capability and capacity to safely operate and maintain critical infrastructure and by
- Enhancing the skills of the workforce by providing access to quality, engineering-related training and education.

2.1 Need for SEASEP

Worldwide it is estimated that annually there are 340 million workplace accidents. Asian countries' construction industries account for a disproportionately high number of both non-fatal and fatal incidents (Workplace Safety and Health Institute, 2017).

The rapid expansion of SE Asian economies and populations is fuelling massive infrastructure spending across SE Asia and consequently construction work is booming. Furthermore, this convulsive increase will drive the region's recovery from the Covid-19 downturn (Deloitte, 2020). Unchecked, a major increase in workplace accidents will result, dramatically worsening an already grave situation.

Long-held and endemic high rates of construction industry

fatalities, combined with what will almost certainly result from the increase in construction projects across the SE Asia region sets both the context and need for the SEASEP programme.

2.2 SEASEP Impact

The International Labour Organisation (ILO), has identified three direct causes of accidental workplace deaths:

- Poor or no safety culture
- Lack of research into health and safety due to poor data available
- Absence of effective health and safety training (ILO, 2018)

SEASEP addresses these issues directly. It aims to improve skills and reduce occupational fatalities by bringing engineering-related skills and education to disadvantaged and under-represented groups. Training in disciplines such as inspection and safety related courses, in accordance with international standards will enable buildings, bridges, pressure vessels, pipelines etc. to be built and operated more safely throughout their service life.

(The Workplace Safety and Health Institute Singapore, 2017)

Phase one of SEASEP can claim little direct impact on the number of accidents or deaths in the workplace in countries

as populous as India (1.4 billion people) and Indonesia (276 million). Rather, the programme's outcomes of improving skills, competence and safety may be viewed as factors that over time enable an appropriate health and safety culture to take root, not just among individuals and companies but also broadly across industries, governments and other agencies. Rather than having a direct cause and effect, the first phase activities of SEASEP can claim some credible attribution to the advancement of workplace health and safety.

SEASEP's first phase activities have mostly focussed on creating a critical mass of qualified competent personnel. Combined with 'train the trainer' and the alumni network, SEASEP is creating a network that will propagate the skills/competence/safety culture within their employers and provide a solid foundation for the more strategic impacts that a second phase will bring, namely leverage and sustainability. This flow of impacts is illustrated in Figure 1.

3. EVALUATION

The results of the post-course surveys are contained in Appendix B. An additional survey was then added to reach those within the companies responsible for managing health and safety. The results for this survey are still pending but initial responses can be found in Appendix C.

In this Section, we evaluate the results of the SEASEP programme against each of the categories and outcome indicators in the evaluation plan (Appendix A and B) in turn.

3.1 Competency

The results of the post-course surveys are contained in:

3.1.1 Competent and safe personnel

The vast majority of courses and examinations delivered through SEASEP are BS EN ISO 17024 compliant and are based upon a competency

evaluation examination requiring a recertification/renewal process every 5 years. This ensures that those holding certification maintain that competency in accordance with the accredited scheme document. This also in itself assures sustainability of the competency attained if the person remains active within that particular job role.

As stated above in order to be awarded certification each individual is required to sit an examination comprising of a theory or practical examination or often both. A bench mark is set by which the scholar would need to match or exceed it in order to be awarded a pass. Additionally, the scholar in some cases may also need to provide evidence of industrial application over a set period of time to be awarded certification.

Because of the above it is not expected that all scholars will pass the examination

and therefore be awarded certification on their first initial attempt. Consideration of this point was vital in ensuring the bursaries granted covered not only the initial examination but also allowed for a retest scenario.

This reiterates that those gaining certification have undergone a rigorous process of assessment before being deemed competent to hold the certification, whilst still allowing each student the best prospect to be successful as part of SEASEP by being given the opportunity to retest.

The pass rates often differ depending on the course type and it is recognised that there will be a fallout of students requiring retests. The following information details the average pass rates and potential fallout for the SEASEP scholars so far.

Table 1

SEASEP Course Type	Total Number of Scholars	Examination Pass Total	Pass Rate %
Visual Welding Inspector (WIS 1)	2702	1338	50%
Ultrasonic Testing L2 (UT L2)	95	59	62%
Penetrant Testing (PT L1/L2)	174	90	52%
Magnetic Particle Testing (MT L1/L2)	160	92	58%
Radiographic Testing Film Interpretation (RTFI)	73	66	90%
BGAS-CSWIP Painting Inspector Grade 2	101	15	15%
BGAS-CSWIP Site Coatings Inspector	21	0	0%
CSWIP Plant Inspector (Risk Based Inspection)	20	Pending	Pending
IOSH Managing Safely Certificate	187	177	95%
NEBOSH International General Certificate in Occupational Health and Safety	48	24	50%
Welder Train the Trainer	15	15	100%
Visual Testing	8	2	25%
TOTAL	3604	1878	52%

Appendix B.2.1 provides a breakdown of the results from the post-course surveys relating to health and safety issues, according to whether the courses were held in India or Indonesia. The results from both countries indicate that the courses had a positive impact on safety culture, as perceived amongst the SEASEP scholars, including:

- Improved understanding of health and safety issues
- Greater influence and impact on health and safety issues
- Ongoing commitment to activities related to health and safety

76% of all respondents plan to insist on participating in events related to occupational health and safety inspection. The overall

responses to the other questions related to health and safety were as in Figure 2.

These are very soft outcome measures; as yet, there is no link with actual safety outcomes. But it is already supported by some very positive employer feedback (see 3.1.3 and Figure 3 below). It is recommended that future feedback be benchmarked by asking employers about the performance of individuals who have taken the SEASEP training versus those who have not.

3.1.2 Increase in number of employed engineers and technicians / higher employment

Appendix B.2.2 provides a breakdown of the results from the post-course surveys relating

to employability, according to whether the course was held in India or Indonesia. On average, the scholars rated the courses highly in terms of their impact on their future employment prospects. In particular, 95% of all respondents found the course useful in gaining employment interest within their own region. This response suggests that the benefits of the SEASEP programme are likely to be realised within the immediate locality, which will help to strengthen outcome 3.1.3 below as well, i.e. more local industry adopting globally-recognised new/improved standards for safety.

The overall responses to other questions related to future employment prospects were as in Figure 3.

Figure 2

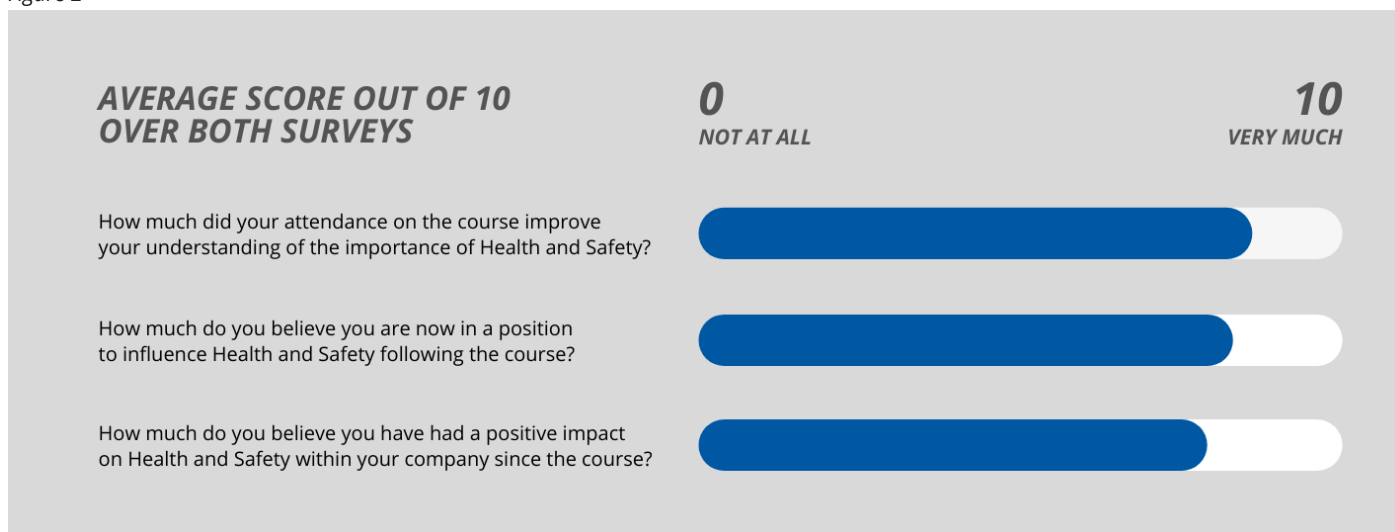
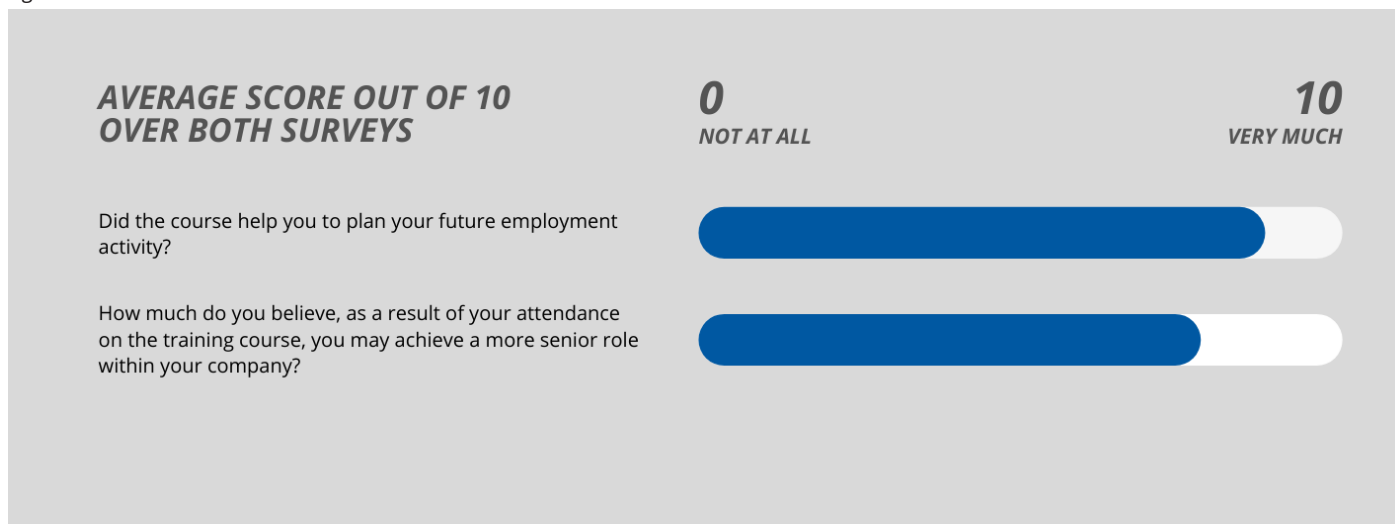


Figure 3



Again, it is not yet clear to what extent these individual perceptions will translate into actual improvements in employment outcomes. This should be tested in the future by asking employers to compare the performance of individuals who have taken the SEASEP training versus those who have not.

The overall breakdown of respondents at the time of the surveys was as follows:

- 75% were in employment
- 18% were college or university students (all attending courses in India)
- 7% classified themselves as unemployed

The proportion of unemployed respondents to the Indonesian survey was 9%, i.e. slightly higher than for the Indian survey. But it was much lower than the proportion of unemployed respondents to the mid-term Indonesian survey (which was 20%). The latest value is based on a slightly different sample of individuals. Nevertheless, it is encouraging that there is now a much lower unemployment rate amongst the students attending the SEASEP programme. This may be because the programme is already having a positive impact on the employability of the attendees. But, as above, this claim needs to be tested during the Phase 2 programme by comparing the employability of those who have taken the SEASEP training versus a control group of those who have not.

Overall 95% of those respondents in employment reported that their employment directly related to the course that they attended. This statistic highlights the targeted nature of the training delivered under the SEASEP programme.

A snap survey was also conducted of 17 previously noted unemployed SEASEP participants. 5 of these have confirmed they are now in employment directly related to their certification achievement through SEASEP, this indicates at this early stage of data collection that 29% of the unemployed participants find employment within a year of attaining the certification. This sample size is relatively small, and it is doubtful whether it is statistically significant. TWI will therefore endeavour to increase the sample size during Phase 2, and revisit this claim.

SEASEP has supported many of its students to develop their careers using internationally recognised certification as a stepping-stone. The following articles and interviews with those taking part in SEASEP demonstrate some of these cases. Please click on the appropriate links to hear from the Scholars and SEASEP promoters:

- Candra Retnaning Ayu - Upskilling for a boost in Career and self-confidence
- Vivien Diawani - Closing the knowledge gap by gaining the right qualification
- Nuramirah - Paving her way in NDT inspection through CSWIP qualifications - YouTube
- Ahmad Khairul Wahab - Combining welding inspection and advanced NDT for a successful career in the inspection field - YouTube

■ Alif Bin Dzulkefly - Why certification is important for career development - YouTube

■ Ms. Vina Nanda Garjati - Taking part in the SEASEP scheme in Indonesia made her reconsider her career path - YouTube

■ Monica - Finds the CSWIP Visual Welding Inspector course beneficial for her career development - YouTube

■ Bhargavi - Speaks about the SEASEP India Scheme - YouTube

■ Nilasri - How the CSWIP Visual Welding Inspector course can benefit young engineers? - YouTube

■ Mr Vinodh - NDT career made easy with TWI's courses... - YouTube

■ Mr Ramakrishnan - How the Visual Welding Inspector Certification course can open job opportunities for Freshers - YouTube

■ Mr Harish - Enhancing NDT careers through Lloyd's Register-funded programme - YouTube

3.1.3 More local industry adopting globally-recognised new/improved standards for safety

Appendix B.2.3 illustrates the results from the post-course surveys that relate to the local adoption of globally recognised safety standards, broken down according to whether the course was held in India or Indonesia.

An overwhelming majority (96%) of those respondents in employment were employed within the target country (India or Indonesia respectively). Those respondents in employment categorised the reach of the companies they worked for as follows:

- 8% operated locally
- 24% operated nationally
- 68% operated internationally

88% of those respondents in employment reported that their company demanded that their role be undertaken by a person qualified to an internationally recognised standard. The majority of these respondents also reported improvements in their companies' safety standards, at least partly due to the SEASEP training they received:

- 76% reported that their training had influenced the adoption of new safety/inspection rules
- 82% reported that their companies insisted on the right Personal Protective Equipment (PPE) as a result of their training
- 85% reported that their companies were in the process of adopting further international health and safety measures (including inspection standards)
- 65% reported that there were safety documents / work standards available in place that had not existed before.

These responses demonstrate Alignment with internationally recognised practices as well as Competency, i.e. there is a strong link between the outcomes presented in this section and the next section. TWI will endeavour to further assess the impact of these improvements on the behaviour of both employers and employees during Phase 2, as part of an adjusted evaluation strategy.

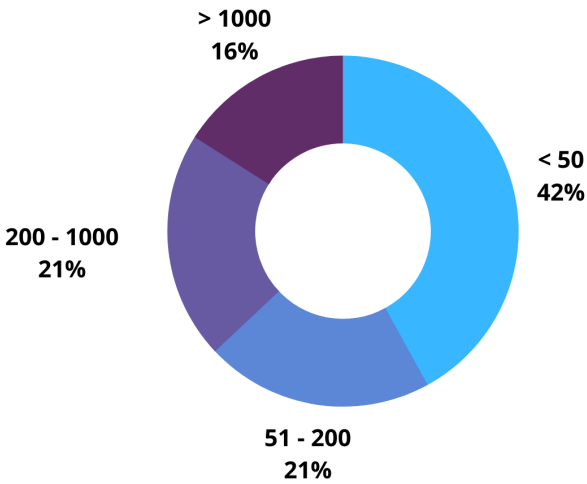
At the time of compiling the following six-question survey report, targeting those responsible for health & safety from companies utilising SEASEP, nineteen company survey responses had been received, so the following information needs to be viewed in this context. However, it should be noted that this is a recent survey and further feedback will be anticipated as part of the 'Final Report' at the end of the project.

An important aspect of the company feedback is to have baseline data on health and safety performance of the employers that are sending their staff on SEASEP training. Data was gathered from employees with designated responsibility for health and safety matters (not the trainees themselves).

- Companies with <50 employees made up the biggest proportion of employers
- 37% of respondents reported recent workplace accidents which resulted in injury and 79% of respondents who reported recent accidents said that changes were going to be made.
- Following training, 94% of respondents reported increased safety and/or inspection had resulted from their SEASEP training.

Figure 4

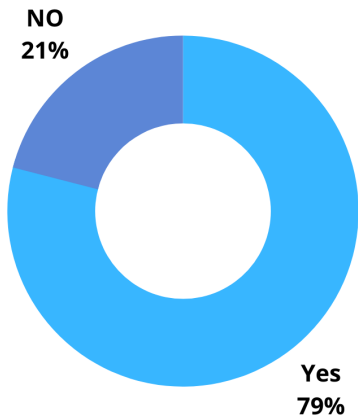
COMPANY WORKFORCE SIZE



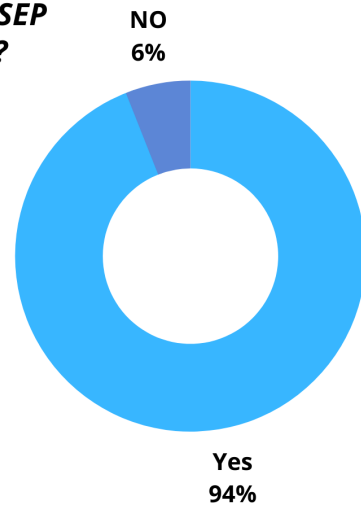
HAS YOUR COMPANY HAD WORKPLACE ACCIDENTS RESULTING IN INJURY?



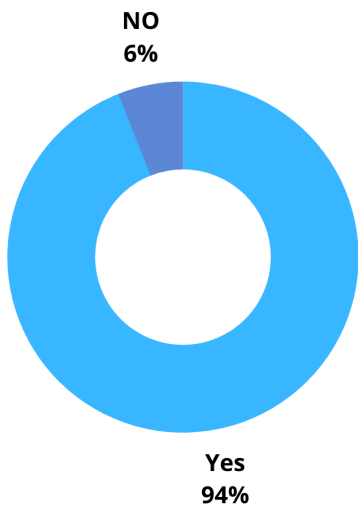
WERE CHANGES MADE AS A RESULT OF ACCIDENTS?



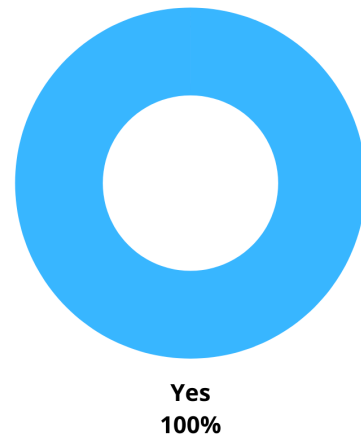
HAVE SAFETY AWARENESS INITIATIVES OR REVISED INSPECTION ACTIVITIES RESULTED FROM SEASEP TRAINING?



HAVE SAFETY OR INSPECTION INITIATIVES RESULTED FROM SEASEP TRAINING?



HAS YOUR COMPANY BEEN ENCOURAGED TO ADOPT INTERNATIONAL SAFETY PRACTICES AND INSPECTION STANDARD AS A RESULT OF SEASEP TRAINING?



India Companies

- Ahlada
- Airworks India Ltd.
- Al Julaiah Petroleum Services WLL
- Allseas
- Amex Alloys Pvt Ltd
- Andhra Sugars Limited
- Anugraha Valve Casting, Coimbatore
- Aurobindo
- Bharat Heavy Electricals Limited
- Bureau Veritas Coimbatore
- BVRITN
- Dee Development Engineer India limited
- Dhanekula Institute of Engineering & Technology
- Edge Quality Inspection Services
- EIL
- Fichtner Consulting Engineer
- Gajalakshmi Industries
- GLIS
- Gulf Lloyd Industrial Services
- Hemalatha Engg
- HPBP, BHEL, Trichy, Tamil Nadu
- Industrial Radiographic Inspection Company
- Insight Quality Services
- IRCLASS
- Janatics
- L&W Construction Pvt Ltd
- Lamprell Energy Ltd
- Larsen & Toubro Limited
- Man industries India Ltd.
- Megha Engineering and Infrastructures limited
- Metmech
- Mozzat Enterprise Sdn Bhd
- NIT Tiruchirapalli
- NRI college
- Precision Equipment's Chennai Pvt Ltd
- PSCMR College of Engineering and Technology
- Ramco Steels Pvt Ltd.
- Royal NDT services
- RPP Infra Projects Ltd
- Salini NDT Services Pvt Ltd
- Schuf Speciality Valves
- SGS Qatar
- Sky industrial components
- SRIET, Coimbatore
- Tafe Bangalore
- The Acetech Machinery Components Pvt Ltd
- Therma Babcock Wilcox Energy Solutions PVT Ltd
- Turbo Energy Private Limited
- TVS Sundaram Fasteners limited
- Vestas Wind Technology Pvt Ltd
- VGM consultant Pvt Ltd
- Welspun Corp Limited
- WTCS (Bangalore)

Indonesia Companies

- Adhi KarYes (Persero) Tbk.
- Al Fattan Ship Industry
- Anta JaYes Utama
- Appus PNG Ltd
- Anugrah Karimun Sakti#
- Asus Service Indonesia
- Bandar Abadi ShipYesrd
- Austin
- Bandar Victory ShipYesrd
- Baker Hughes
- Barata Indonesia
- BBPLK Serang
- Binder Indonesia
- Belum Mendapatkan Pekerjaan
- Bintan Offshore
- BP Indonesia
- Bukaka Teknik Utama Tbk
- Candi Guna Mandiri
- Cast lab Indonesia
- Caterpillar Indonesia Batam
- Chandra Asri Petrochemical
- Chevron
- Cigading Habeam Centre
- Delta Inti Wangsa
- Citra Panji Manunggal
- Depriwangga
- Citra Tubindo Engineering
- Citic Seram Energy Ltd
- Cladtek Bi-Metal Manufacturing
- Citra Tubindo Engineering
- Daeah E&C Indonesia
- Elnusa Fabrikasi Konstruksi
- Daekyung indah heavy industry
- CSTS - JO (Chiyoda, Saipem, Tri Patra & SAE Joint Operation)
- Danalam Cipta Pratama
- Gunanusa Utama Fabricators
- Dinamika Persada Nusantara
- Depriwangga
- Dua utama jaYes - Indonesia, batam
- Kampuh Welding Cikarang
- Elnusa Fabrikasi Konstruksi
- DSAW.PT

- Gearindo Prakarsa
- Karimun Sembawang ShipYard
- Gunanusa Utama Fabricators
- Ecogreen Oleochemical
- Inspektindo Sinergi Persada
- Ex Dermott Batam
- Intan Prima Kalorindo
- ExxonMobil
- International Paint Indonesia
- Global Pro International
- JGC Indonesia
- GQS
- KALI Rayes Sari (DURI)
- HITEK Indo Mulia
- Kaltim Prima Coal
- Hyundai Engineering & Construction
- Karang Mas Unggul
- IKPT-Toyo Eng
- Koin Konstruksi E&C
- Korindo
- Kolang Sri Indonesia
- Indosyfa
- KPW (outsourc for PT. Pertamina Refinery Unit VI Balongan)
- INPEX
- MBS
- Institut Teknologi Sepuluh Nopember (ITS)
- Momentum Anugrah Indonesia
- Intertek Industry Services (S) Pte. Ltd.
- Nov Profab Batam
- Jan De Nul.nv
- Nusareka prima engineering
- Patra Drilling Contractor
- Pertamina Geothermal
- Jatim Mustika Nusa
- PNS
- Kemnaker
- PPG Indonesia
- Krakatau Steel
- Qatargas Operation Limited
- Kuiper International
- Radiant
- PAL Indonesia
- RDMP JO
- Mc.Dermott Indonesia
- RED Services
- Patria Maritim Perkasa
- Remote Oilfield Service
- Mesitechmitra Purnabangun
- Resous Expet Development
- Meitech Eka Bintang
- RINA Indonesia
- Mitra Katup Nusantara
- Robutech
- PLN (Persero) Pusmanpro
- Saipem Indonesia Karimun Branch
- Multi Ocean ShipYard
- SYS Macam Indonesia
- Poemerah Acindo
- Samudera Oceaneering
- Mucoindo
- Saudi Aramco
- NOV Profab
- Sembcorp Marine
- Multikarya Asia Pasifik Raya
- Shaftindo Energi
- Putra Cilegon Mandiri
- Shapoorji Pallonji Oil and Gas
- Putra Perkasa Abadi
- Singatac Bintang
- Oceaneering Batam
- SMK N 6 Batam
- Rekayasa Industri
- SMOE
- OMS
- Subsea 7
- Orsted
- Sunrise Steel
- SENA
- Surveyor Indonesia Cabang Jakarta (SIJAK)
- Pertamina Drilling Services Indonesia
- Tangerang Gas Industri
- Titis Sampurna Inspection
- Tenaris Hydrill
- TPCO Pan Asia
- Tetra Pak stainless Equipment
- PMMJJO
- Thai NDT Indonesia
- Vista Maritim Indonesia
- Tidak Sedang Bekerja
- PNS
- Tiga Pilar Energi
- VME Process Batam
- TIP
- Pride Trisula Nusantara
- Titis Sampurna Inspection
- Wahana Karsa Swandiri
- Tosan Aji Mumpuni
- Prospera
- Toyo Kanetsu Indonesia
- Oki Pulp and Paper
- Trihasco Utama
- Wens Quality Assurance
- Tripatra
- Amnor Shipyard
- Usda Seroja Jaya
- Wika Industri Dan Konstruksi
- UT Quality Indonesia
- Bredero Shaw Indonesia
- Vista Maritim Indonesia
- WASCO
- VME Process
- Chugoku Marine Paints Indonesia.
- Waagner Biro Indonesia
- Cilegon Fabricator
- Wasa Mitra Engineering
- Pipa Mas Putih
- Rekind
- Tenaris Hydrill



3.2 Alignment

3.2.1 Internationally recognised and accredited training courses

Visual Welding Inspector (WIS 1)

International standards covered:
BS EN ISO 176371

The CSWIP Visual Welding Inspector course is designed for welders, operators, line inspectors, and foremen who carry out the visual examination of welded joints. It is also suitable for welding quality control staff and anyone who needs basic training in welding inspection alongside a qualification. The course is focussed on the assessment of surface breaking welding flaws which are assessed visually. This course is generally classed as an initial course for those involved in the assessment of weldments as part of a welded structure. It has a set career path leading to Senior Welding Inspector certification and fits well with the objectives of SEASEP.

Ultrasonic Testing L2 (UT L2)

International standards covered:
ISO 9712, BS EN ISO 17640, BS EN ISO 11666.

This course is suitable for all personnel including NDT technicians, inspectors, engineers and surveyors who require a thorough and comprehensive introduction to ultrasonic testing of welded

joints. The course is focussed on the application of ultrasonic testing to locate, size and characterise internal flaws to international standards. It has a career path that leads to other advanced techniques such as Phased Array Ultrasonic testing and Time of Flight Diffraction. It is a critical inspection method fitting well with the objectives of SEASEP.

Penetrant Testing (PT L2)

International standards covered:
ISO 9712, BS EN ISO 3452, BS EN ISO 23277.

The course is suitable for all NDT personnel, inspectors and technicians engaged in or responsible for weld inspection, inspection of castings and forgings during fabrication or in-service inspection. This course is focussed on flaw location of surface breaking flaws often not visible to the human eye and identification at both the manufacturing stages and in-service stages. It is a critical inspection method a fits well with the objectives of SEASEP.

Magnetic Particle Testing (MT L2)

International standards covered:
ISO 9712, BS EN ISO 9934.

The course is suitable for all NDT personnel, inspectors and technicians engaged in or responsible for weld inspection, inspection of castings and forgings during fabrication or in-service inspection. This course is focussed on flaw location of surface breaking or slightly sub-surface flaws often not visible to the human eye and identification at both the manufacturing stages and in-service stages. It is a critical inspection method fitting well with the objectives of SEASEP.

Radiographic Testing Film Interpretation (RTFI)

International standards covered: ISO 9712, BS EN ISO 17636.

This course is designed for radiographers, inspectors, engineers, and surveyors who wish to interpret radiographs but do not have a good understanding of the principles of radiography. This course designed for personnel responsible for judging the quality of radiograph and reaching informed decisions regarding the identity and extent of the defects revealed. It is an essential NDT method for locating sub-surface flaws and fits well with the SEASEP objectives.

BGAS-CSWIP Painting Inspector Grade 2

International standards covered: National Grid, T/SP/PA/9, T/SP/PA/10

This course covers corrosion theory, surface preparation, surface contaminants and tests, paint constituents and technology, solutions and dispersions, drying and curing properties and performance, and specified painting conditions. The course covers paint faults, colour, inspection methods, specification requirements, and health and safety and working practices. This course fits well with the SEASEP objectives.

BGAS-CSWIP Site Coatings Inspector

International standards covered: National Grid, T/SP/CW/5, T/SP/CW/6, T/SP/CW/9

It is also suitable for anyone engaged in the inspection and coating of new and existing pipelines. This approval is very useful to welding inspectors as it can extend their working time capability on pipeline projects. The course fits well with the SEASEP objective of delivery of safety critical infrastructures.

CSWIP Plant Inspector (Risk Based Inspection)

International standards covered: Drawn from International standards and codes including best practice.

Designed for engineering, technical, operations, maintenance or inspection operatives working in the fields of oil and gas production, chemical processing, power generation, utilities, commercial works (vendor) inspection, classification or insurance, the course provides a wide-ranging knowledge of technical issues related to the in-service inspection of aging assets in process plants, terminals, refineries, power stations and so on. This course fits well with SEASEP objectives of maintaining safer operating plant.

IOSH Managing Safely Certificate

International standards covered: Internationally Recognised Institution of Occupational Safety and Health

The course covers an introducing managing safely, assessing risks, controlling risks, understanding your responsibilities, understanding hazards, investigating incidents, measuring performance. Strongly aligned with SEASEP objectives.

NEBOSH International General Certificate in Occupational Health and Safety

International standards covered: Internationally recognised National Examination Board in Occupational Safety and Health

NEBOSH International General Certificate is a globally recognized health and safety qualification which is intended for companies or individuals working to international standards with regards to Health, Safety & Environment as this course focuses on the International Labour Standards (ILO) codes of practice. Strongly aligned with SEASEP objectives.

Visual Testing (VT L2)

International standards covered: ISO 9712, BS EN ISO 17637

Designed for inspection engineers, technicians, NDT operators or surveyors who require a knowledge of visual inspection techniques, an understanding of likely problem areas and an appreciation of inspection methodology. Aligned with SEASEP objectives.

Welder Train the Trainer

International standards covered: BS EN ISO 9606-1, ISO 3834

A course designed to qualify certified welders to instruct and train other welders in various welding techniques and welding positions. Specifically designed to promote welding to international standards and strongly aligned with the sustainability of SEASEP objectives.

3.2.2 Career tracking via Foundation alumni programme

During the post-course surveys, 83% of scholars expressed a willingness to feature in SEASEP case studies to help promote the programme in future. This proportion was almost identical for both surveys (see Appendix B.3.1 for breakdown).

All current SEASEP scholars have now been individually contacted via email campaigns both in 2020 and more recently in 2021 including social media campaigns where the benefits of joining the Foundation alumni programme have been emphasised. We are sure the number registering for this as SEASEP scholars will continue to rise.

3.2.3 Increase proportion of engineers and technicians from recognisably disadvantaged and under-represented groups

At April 2021, 5.5% of candidates who had come through SEASEP training were women. The level of educational attainment among this cohort was overwhelmingly degree level (81%) as shown in Figure 5.

93% of female SEASEP candidates with degree level education chose CSWIP 3.0 training (Figure 6).

Figure 5

FEMALE CANDIDATES' EDUCATIONAL ATTAINMENT LEVEL

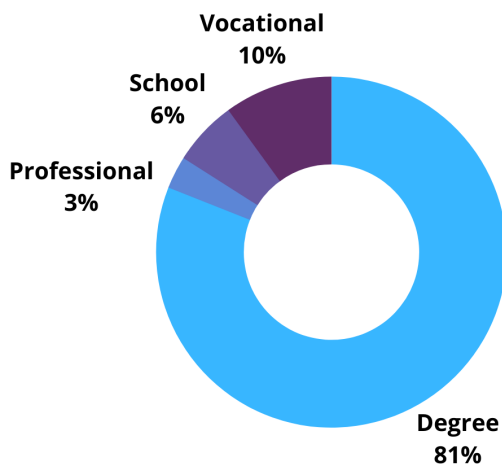
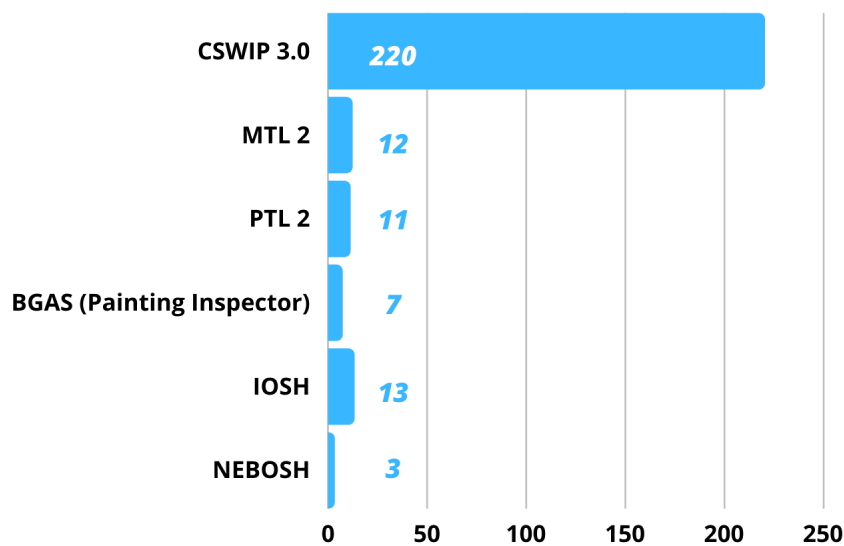


Figure 6

FEMALE CANDIDATES' SEASEP TRAINING CHOICES



CASE STUDY



Female students in Indonesia talk about how SEASEP has developed their careers

To encourage female participation in SEASEP, women candidates were supported by 100% bursary and both mixed and all female classes were made available were widely advertised and marketed through the provinces.

Appendix B.3.2 presents the results from the post-course surveys relating to the employment status of female SEASEP students.

The breakdown of responses to the Indian survey amongst female students was as follows:

- 21% were in employment
- 75% were college or university students
- Just 4% classified themselves as unemployed

Encouragingly, the level of unemployment was almost exactly the same amongst female respondents to the India survey as amongst male respondents, and is very much lower than the general unemployment rate amongst women engineers in India, which was about 40% in 2018 (Society of Women Engineers, 2018).

The responses from female scholars to the Indonesian survey showed a very different pattern, as follows:

- 81% were in employment
- None identified themselves as students
- 19% classified themselves as unemployed

The level of unemployment for female respondents to the Indonesian survey was much higher than for male respondents, amongst whom the reported level of unemployment was just 8%.

A total of 95% of the female respondents to the two surveys who were in employment reported that their employment directly related to the course that they attended, again highlighting the targeted nature of the training delivered under the SEASEP programme.

Beyond this, caution must be exercised when drawing conclusions from this, as there is no reliable baseline data. Labour market data across the whole SE Asian region is inconsistently recorded within as well as between countries. Moreover, the 'informal' nature of many of the region's economies characterised by the use of untrained contract labour, leads to under reporting of data. In turn this leads to unreliable measures of critical indicators such as gender participation in engineering occupations and widely varying accident fatality rates (ILO, 2018), (Patel and Jha, 2016), (thehindu.com, 2020), (IndustriALL, 2021), (TWI and ILO, private correspondence, 2021).

3.3 Sustainability and Leveraged Funding

3.3.1 On-line learning resources and new delivery models

Over a number of years TWI Training and Examinations have developed, and continue to develop on-line learning resources to offer a blended approach to learning to its clients. These courses have benefited students globally and have also aided SEASEP scholars to take advantage of pre-learning packages in support of their studies. Access to the on-line learning material was offered free to all SEASEP scholars as part of the courses delivered. TWI pays the license fees on behalf of the students. The international regional offices have also delivered on-line live courses via platforms such as ZOOM in order to maintain SEASEP momentum. This has proved to be an essential way of maintaining student focus during the very difficult times being experienced due to Covid-19 restrictions globally.

3.3.2 Translations

Translation of surveys, in particular for Indonesian students into Bahasa has proved very useful. TWI will also look at further translations for actual course materials to benefit students generally. Selected language translation has been adopted but has generally been based upon local language conditions. In the case of India and Indonesia it was found that most students had good written and verbal skills in the native English language.

3.3.3 Workshop and seminars

A number of workshops and seminars have been attended in both India and Indonesia to promote SEASEP and its objectives. Below are examples of the visits made. It should also be noted a number of these companies/organisations contributed floor space and normal fees free of charge for the events. The seminar attendance included large events such as IVETS

3.3.4 Programmes that continue beyond Foundation funding

India and Indonesia are currently in negotiation regarding programmes beyond foundation funding. Indonesia have opportunities with the Indonesian Ministry of Manpower. A MoU was signed on the 12th November along with other MoU's centred around welder training and welder competency. The MoU was based upon the following scope of cooperation:

- Training and certification programs at the Vocational Training Centre (BBPLK Serang)
- Audit of training facilities
- Training the Trainer programme
- Provision of the certification Service
- Infrastructure and equipment preparation
- Mentoring training delivery
- Cascading the training and certification programs to other VTCs

- Advise and support for job placement of program graduates

- Funding and Financial support

- Surveillance Audits

(MOU signed between TWI and Ministry of Manpower at a ceremony in Indonesia)

The Train the trainer of the selected welder trainers at the Serang facility went ahead and TWI are awaiting discussions on the memorandum in order to move forward. This is to take place after the appointment of new management is in place at the government facility.

India have been working with colleges promoting the value of SEASEP and have secured the training courses to become an integral part of the course syllabus at a number of colleges an example of this is acquiring an annual program of delivery at Potti Sriramulu Chalavadi Mallikarjuna Rao College of Engineering and Technology established in 2008 by a non-profit philanthropic, via the 107 years old SKPVV Hindu High Schools Committee, which is positioned in the very heart of Vijayawada.

TWI India and Indonesia are also committing free access to selected online training materials within the SEASEP Phase 1 countries beyond LRF funding.

India have also committed to train 400-500 NDT students per year free of charge. These will be students new to the industry and after training is completed will gain industrial experience in employment placements and therefore return with verified industrial practice leading to certified NDT operators to the international ISO 9712 standard.



Photo: MOU signed between TWI and Ministry of Manpower at a ceremony in Indonesia

This concept is currently being developed and will be expanded in the final Phase 1 report.

Other discussions are taking place with various organisations but have been delayed due to the Covid-19 situation. It is anticipated there will be more agreements and initiatives set up when restrictions start to lift further in these countries.

TWI continue to market SEASEP and maintain the momentum that has built in line with the project objectives. It will achieve this by maintaining contact and developing partnerships with key stakeholders. Including educational establishments, government ministries and industry as appropriate. Table 3 is a snap shot of the marketing activities and seminars that have taken place and have proved most promising for the Sustainability of SEASEP beyond funding.

3.3.5 Leveraged funding

At this moment in time leverage funding has been arduous to secure. Covid-19 has made it difficult for interested parties to commit due to the heightened financial nervousness brought about through lockdown effects to the economies. However, TWI have some opportunities to heighten visits as these restrictions are lifted, TWI can then start to follow up on potential leverage funding from previous engagements with Government agencies, educational establishments and industry.

Table 3

Date	India / Region	Name of Responsible TWI Person/s	SEASE Activity	If other give details	Organisation visited
04/12/2019	Karnataka	Venkat, Siva Nagavi, Satish, Manoj	Marketing	Seminar	NDE Conference
15/08/2020	Tamil Nadu	Ashutosh Joshi	Marketing	Seminar	Air works
06/10/2020	Tamil Nadu	Rakesh	Marketing	Seminar	BHEL
28/10/2020	Maharashtra	Ashutosh Joshi	Marketing	Seminar	IQS, Pune
04/11/2020	Tamil Nadu	JK Johnson	Marketing	Seminar	CSI College
06/11/2020	Uttar Pradesh	Ashutosh Joshi	Marketing	Seminar	Ramco Steel, Delhi
06/11/2020	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	Swarnandhra college
09/11/2020	Uttar Pradesh	Ashutosh Joshi	Marketing	Seminar	Deepiping
12/11/2020	Uttar Pradesh	Ashutosh Joshi	Marketing	Seminar	JREW, Delhi
25/11/2020	Tamil Nadu	Ashutosh Joshi	Marketing	Seminar	Precision, Chennai
26/11/2020	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	KITs, Divili
02/12/2020	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	VSM Engineering college, Andhra Pradesh
08/12/2020	Tamil Nadu	Ravi Rajarao	Marketing	Seminar	NIT, Trichy
11/12/2020	Maharashtra	Ashutosh Joshi	Marketing	Seminar	Thermax
16/12/2020	Maharashtra	Ashutosh Joshi	Marketing	Seminar	Thermax, Pune
16/12/2020	Telangana	Santhosh Kumar B	Marketing	Seminar	JNTU, Hyderabad
21/12/2020	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	Aadarsha Engineering College, Andhra Pradesh
23/12/2020	Tamil Nadu	JK Johnson	Marketing	Seminar	Bannari Amman College, Erode
30/12/2020	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	Pyda college, Kakinada
04/01/2020	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	Pottisree ramulu college
07/01/2021	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	DIET, Vijayawada
08/01/2021	Andhra Pradesh	Sateesh Reddy	Marketing	Seminar	DIET, Vijayawada
11/01/2021	Maharashtra	Santhosh Kumar B	Marketing	Seminar	Eil, Mumbai
22/03/2021	Tamil Nadu	JK Johnson	Marketing	Seminar	NPCIL, Kudankulam

Table 4

Date	Indonesia / Region	Name of Responsible TWI Person/s	SEASE Activity	If other give details	Organisation visited
15-Aug-18	Special Capital Region of Jakarta	Kumar Annamalai	Other	Pre-Workshop discussion	Millie (British Embassy)
16-Aug-18	East Java	Kumar Annamalai	Visiting potential SEASEP clients	Workshop	PT. PAL, PELINDO III, PT. DUMAS, ITS, PLN, PPNS, British Embassy
23-Aug-18	Special Capital Region of Jakarta	Syarif Hussein, Ernesto Moskini	Marketing	Workshop	Ministry of Manpower, British Embassy, PT. IKI, PT. Pelindo, BLK
27-Sep-18	South Sulawesi	Kumar Annamalai, Abbas	Marketing	Workshop	Ministry Of Manpower, British Embassy, BLK, South Sulawesi Provincial Government
28-Sep-18	Central Java	Kumar Annamalai	Marketing	Workshop KEMNAKER	Polimarin Semarang, British Embassy, and Ministry of Manpower
29-Sep-18	Central Java	Kumar Annamalai	Marketing	Workshop KEMNAKER of Manpower	Polimarin Semarang, British Embassy, and Ministry of Manpower
04-Oct-18	Special Capital Region of Jakarta	Husni Athaillah	Marketing	Workshop	British Embassy
09-Oct-19	Special Capital Region of Jakarta	Husni Athaillah, Neil Harrap	Marketing	Conference	Association of Polytechnics and Industry Indonesia
16-Oct-18	Special Capital Region of Jakarta	Husni Athaillah	Marketing	Seminar	Ministry Of Manpower
26-Oct-18	Special Capital Region of Jakarta	Husni Athaillah	Marketing	MoU Meeting	BKI Academy
31-Oct-18	Special Capital Region of Jakarta	Husni Athaillah, Fahmi	Marketing	Exhibition (IIW 2018)	JIECC Kemayoran
12-Nov-18	Central Java	Ernie Moskini, Husni Athaillah	Other	MoUg Signin	Ministry Of Manpower
15-Nov-18	Special Capital Region of Jakarta	Husni Athaillah	Other	MoU Signing	Kampuh Welding
07-Dec-18	Kuala Lumpur, Malaysia	Husni Athaillah	Other	MoM visiting TWI KL	TWI KL Office
17-Dec-18	Special Capital Region of Jakarta	Husni Athaillah	Other	Job Placement Opportunity	Ministry Of Manpower
09-Jan-19	Special Capital Region of Jakarta	Husni Athaillah	Marketing	SEASEP Presentation	Ministry Of Industry
27-Jan-19	Banten	Husni Athaillah	Other	ToT Meeting	BBPLK Serang
01-Feb-19	Special Capital Region of Jakarta	Husni Athaillah, Hariyo	Marketing	SEASEP Presentation	Pancasila University
17-May-19	Special Capital Region of Jakarta	Husni Athaillah	Marketing	Seminar at Sentul	Ministry Of Industry
03-Dec-19	Special Capital Region of Jakarta	Husni Athaillah	Marketing	NDT Seminar	
11-Mar-20	Special Capital Region of Jakarta	Husni Athaillah	Marketing	Exhibition	BKI Academy

4. DEMOGRAPHIC STATUS AND FINANCIAL STUDENT OUTPUT

4.1 Demographics

The following charts highlight the reach and spread of SEASEP across the states of India and provinces of Indonesia.

Figures 7 and 8 illustrate the percentage of SEASEP participants across the states of India and provinces of Indonesia.

Some states/provinces have a greater industrial base that deal with manufacturing and inspection within the critical infrastructure industries and therefore a greater potential workforce requiring SEASEP.

In this case Tamil Nada state in India and the Riau Islands province of Indonesia have a higher percentage of SEASEP participants due to the course types that were relevant to state/province industry.

Figure 7

INDONESIA PERCENTAGE OF SEASEP SCHOLARS BY PROVINCE

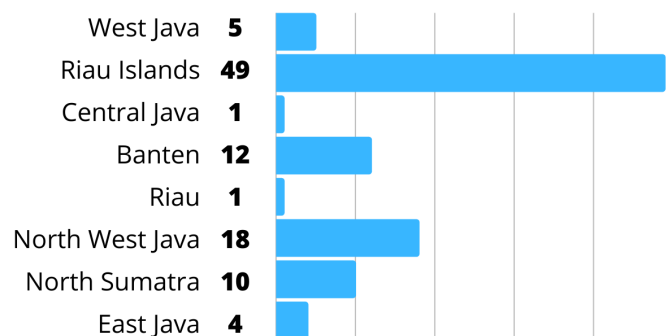
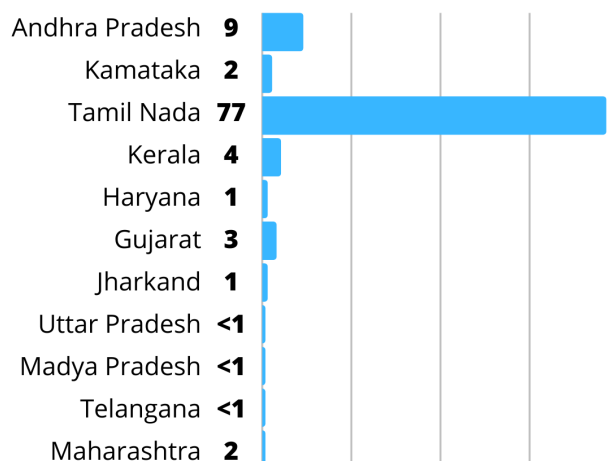


Figure 8

INDIA PERCENTAGE OF SEASEP SCHOLARS BY PROVINCE



4.2 Financial Data and Student Output

Table 5

Country	SEASEP Scholars	Course Type	Course Price with Examination (£)	Total Cost (£)	Candidate Contributions (£)	Lloyds register Foundation Bursary total (£)	TWI and SEASEP participating companies Contribution	TWI % Contribution	Student % Contribution	LRF % Contribution	Average Bursary Spend (£)	
India/Indonesia	2702	CSWIP 3.0	£902	£2,437,204	£241,246	£1,311,863	£884,095	53.83%	36.27%	9.90%	£485.52	
Indonesia	48	NEBOSH	£1,852	£88,896	£49,176	£31,294	£8,426	35.20%	9.48%	55.32%	£651.96	
India	95	UT L2	£942	£89,490	£12,455	£43,594	£33,441	48.71%	37.37%	13.92%	£458.88	
Indonesia	20	MT L1	£976	£19,520	£3,180	£11,131	£5,209	57.02%	26.69%	16.29%	£556.55	
Indonesia	20	PT L1	£976	£19,520	£3,205	£11,218	£5,097	57.47%	26.11%	16.42%	£560.90	
India/Indonesia	140	MT L2	£789	£110,460	£14,466	£51,290	£44,704	46.43%	40.47%	13.10%	£366.36	
India/Indonesia	154	PT L2	£774	£119,196	£15,462	£54,780	£48,954	45.96%	41.07%	12.97%	£355.71	
India	8	VT L2	£627	£5,016	£501	£1,755	£2,760	34.99%	55.02%	9.99%	£219.38	
India/Indonesia	73	RTFI	£916	£66,868	£12,866	£28,640	£25,362	42.83%	37.93%	19.24%	£392.33	
Indonesia	15	Welder	£2,821	£42,320	£0	£42,230	£90	99.79%	0.21%	0.00%	£2,815.33	
		Train the trainer										
Indonesia	20	Plant I (RBI)	£1,328	£26,560	£8,186	£12,864	£5,510	48.43%	20.75%	30.82%	£643.20	
Indonesia	101	BGAS	£1,411	£142,511	£38,009	£82,888	£21,614	58.16%	15.17%	26.67%	£820.67	
		Paint Inspector										
Indonesia	21	Site	£1,411	£29,631	£10,941	£13,676	£5,014	46.15%	16.92%	36.92%	£651.24	
		Coating Inspector										
India/Indonesia	187	IOSH	£250	£46,750	£5,398	£35,762	£5,590	76.50%	11.96%	11.55%	£191.24	
		Managing Safely										
India/Indonesia	436	Retests completed	£300	£130,800	£0	£64,650	£66,150	49.43%	50.57%	0.00%	£148.28	
India/Indonesia	1349	Remaining Retests not yet completed	£300	£404,700	£0	£202,365	£202,335	50.00%	50.00%	0.00%	£150.01	
UK		TWI Additional Operational, Business Development and Marketing costs for UK					£191,534					
India/Indonesia		TWI Additional Operational, Business Development and Marketing costs (India and Indonesia)					£180,346					
India/Indonesia		Payment in Kind by Companies in India and Indonesia					£12,264					
TOTAL Exams including Retests to be completed	5,389				£415,091	£2,000,000	£1,748,495					
					Predicted Phase 1 Spend Target	£2,000,000	Average % Contribution at the Gateway Report Stage					
								LRF	TWI	STUDENT		
								48.04%	41.99%	9.97%		

The monies left remaining totals £202,365 of the Lloyds Foundation Phase 1 bursary. This will be matched by TWI in order to complete the remaining retests required. Leverage funding currently stands at £12,264. This has generally been small amounts of payment in kind by the following organisations listed in Table 5:

Table 5

Country	Payment in kind contributions	Country	Payment in kind contributions
Indonesia	Pt. PAL	India	Swarnandhra College
Indonesia	PELINDO III	India	Deepiping
Indonesia	Pt. DUMAS	India	JREW, Delhi
Indonesia	ITS	India	Precision, Chennai
Indonesia	PLN	India	KITs, Divili
Indonesia	British Embassy	India	VSM Engineering College, Andhra Pradesh
Indonesia	BLK	India	NIT, Trichy
Indonesia	Ministry Of Manpower	India	Thermax
Indonesia	South Sulawesi Provincial Government	India	JNTU, Hyderabad
Indonesia	Polimarin Semarang	India	Aadarsha Engineering College, Andhra Pradesh
Indonesia	PT Titis Sampurna Inspection	India	Bannari Amman College, Erode
Indonesia	BBPLK Serang	India	Pyda College, Kakinada
Indonesia	Pt. Caterpillar Indonesia	India	Pottisree Ramulu College
		India	DIET, Vijayawada
		India	Eil, Mumbai
		India	NPCIL, Kudankulam

5. CONCLUSIONS & RECOMMENDATIONS

The SEASEP project set out to meet its main objectives of:

- Competency
- Alignment
- Sustainability
- Leverage

TWI through SEASEP was tasked to hit a target of 4,000 students over a period of 2 years providing competency based training leading to internationally recognised certification in the targeted countries of both Indonesia and India. Due to natural pass and fail rates for the courses slight adjustments were required to ensure success could be achieved for each student under SEASEP. The robust evaluation in appendix A was part of the robust evaluation system and examination pass rates was one of its considerations and therefore some bursary for those that would need financial help to complete a retest was taken onto account. With that in mind a further decision was made to allow for retest within the bursary structure. With this in mind Table 1 evaluates that in total

the number of retests will be around 1800 and therefore the number of students completing the initial examination would be nearer 3700. In any future phase of SEASEP bursary spend should take into account pass rates and allocation of bursary and also the time factor to allow for retests to take place.

The alignment of the courses to internationally recognised standards was fully supportive of the SEASEP objectives. The surveys carried out and detailed in Appendix B demonstrate that both participants and companies appreciate the course content, delivery and their relevance to health and safety objectives. It is also extremely positive to see that there is an employment gain for those taking part in SEASEP, with currently 3 out of 10 previously unemployed finding work related to the course they attended. Female participation was actively encouraged and there is good feedback on how this is helping career progression. Sustainability of SEASEP beyond funding looks positive so far with both educational establishments

and government ministries pledging cooperation to maintain and spread the SEASEP concept amongst their institutes. TWI will be also playing an active role in maintaining heavily discounted training in particular giving free access to online training which can be used by scholars as units against actual certified courses. This will make access to training more accessible to potential participants. Leverage funding has certainly proved to be more difficult to establish. However, much of this was caused by lost impetus due to the Covid-19 pandemic when TWI representatives were not able to visit key stakeholders. However, TWI will continue to pursue this up to the Phase 1 project end date in January 2022. SEASEP has been a very positive experience for the scholars and a partial success so far held against the main objectives, it is envisaged with the remaining time for Phase 1 improvements will be made against the main objectives.

The effect on the lives of SEASEP students has been a real highlight. Their enthusiasm and appreciation of the opportunity to either gain employment or further their careers and make a difference to inspection integrity and the health and safety culture within their companies is very encouraging and highlights a major success for the project. However, Phase 1 of the project so far, has been far from easy, the marketing and build up to reach the minimum numbers as per SEASEP objectives have been challenging but the efforts of all the regional offices to make this happen is a testimony to their commitment to SEASEP. Lessons need to be learned about project build up time, in as much as the extension granted due to Covid 19 still allowed little time to complete the project numbers, this was mainly due to organisation of retests for students whilst affording time to meet key stakeholders. It is therefore recommended that the project time frame be extended to three years as opposed to two years as originally conceived to allow for:

- a) Better project evaluation,
 - b) Selection of candidate types,
 - c) Consideration of retests for candidates,
 - d) Affording more time to explore SEASEP partnerships to build project sustainability.
- It should also be considered to target the amount of bursary based upon the working population. India and Indonesia are in the top three most populous countries within South East Asia inclusive of China. It is therefore suggested that due to the SEASEP impetus gained within these countries, which was then curtailed by Covid 19, an extension of bursary

should be considered to meet the objectives originally set for SEASEP within these countries and to pick up on previously nurtured potential partnerships. Other countries listed for consideration are Thailand, Philippines, Nepal, Bangladesh, Bhutan and Sri Lanka by regional managers. There is little data available to use as a benchmark for Nepal, Bangladesh and Bhutan (Bhutan has a very low population <1m and small workforce). Sri Lanka has data but there are very low reported accidents and fatalities in comparison with Thailand and the Philippines. Bangladesh has most reported accidents within the textiles industry with most fatalities taking place within the steel, ship building, ship breaking and construction industries. However, the reported accidents and fatalities appear to be significantly lower than Thailand and the Philippines. 70% of the shipyards in Bangladesh are located in and around Dhaka, 20% are in Chittagong and 10% are in Khulna and Barisal. It may be worth considering targeting these areas for additional funding through the India office. Others that may be considered are certain countries within the Sub-Sahara Africa region. Data on accident and fatality statistics is not well reported but small studies indicate that the rate of fatalities within construction is high and the figure could be around 31/100,000 which is ten times more than the UK level (Work-related fatalities in the South African construction industry: 2004 to 2006) Heavy industries in countries such as South Africa and Nigeria may be further targets for the Skills Enhancement Programme. TWI do have affiliated representatives in these countries that could facilitate the programme. Recommendations for improvements to the evaluation plan have been given by the

‘independent evaluation of the South East Asia skills enhancement programme’ produced by Technopolis. TWI are in agreement with the improvements laid out in that report for the potential phase 2 of the project. The main tools and methodologies for improvement inclusive of:

- a) Implement baseline surveys to consider the expectations of the participants and actual impacts
- b) Increased efforts to collect company input on the effects of SEASEP on their Health and Safety culture
- c) Extend surveys to other stakeholders such as educational institutions collaborating in the project to expand on how SEASEP training impacts their activities, curriculum
- d) Develop more case studies around the benefit of participants in creating specific outcomes related to project objectives
- e) Collate and assess information on participants progression to higher level courses sponsored by themselves or other organisations

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APPENDIX A

SEASEP Evaluation Plan (reproduced from Murfin, 2019), GA\100057

Category	Outputs	Outcome Indicators	Question / Activity	Source				
				Application Form	Evaluation Form	Post-course questionnaire	Create	Source (locate)
Competency	Competent and safe: Welders, NDT technicians, safe paint and blasting technicians, and welding inspectors and QC co-ordinators Competent HSE specialists	% success rate of exam	% success rate of exam				■	
			How has the course impacted your understanding of a safety culture and your mind set in this regard?			■		
			Has the course allowed you to move into a position to influence safety in your working?			■		
			Are you more informed as to the health and safety aspects of your work as a result of the course?			■		
			Are you attending events relating to occupational health?			■		
			Are you participating in any safety awareness initiatives/ activities as a result of your training? What has been the impact?			■		
			Increase in the number of employed engineers and technicians/higher employment	Identify scholars showing career progression through courses taken				
		Are you in employment (in the discipline of the course)	■ *			■ *		

Category	Outputs	Outcome indicators	Question / Activity	Source				
				Application Form	Evaluation Form	Post-course questionnaire	Create	Source (locate)
			% success rate of Are you eligible for or have attained a promotion or more senior role as a result of your training?			<input checked="" type="checkbox"/>		
		More local industry adopting globally-recognised new / improved standard for safety (note: link to Alignment,	Locating evidence of local standards adoption in target country and market					<input checked="" type="checkbox"/> *
			Are you employed in the target country?			<input checked="" type="checkbox"/>		
			What is the average size of your company (insert numbers e.g. <50, 50-250, 250-1000, >1,000)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
			Does your company operate locally, nationally or internationally?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
			What is the company impact of your training (Yes/No/Don't know) Did your company insist on the right PPR equipment as a result of your training			<input checked="" type="checkbox"/>		
			Does your company now adhere to ISOXXX as a result of your training			<input checked="" type="checkbox"/>		
			Is your company in the process of adopted ISOXXX or similar?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
			Does your company demand that your role is undertaken by a person qualified to an internationally recognised standard?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

Category	Outputs	Outcome Indicators	Question / Activity	Source					
				Application Form	Evaluation Form	Post-course questionnaire	Create	Source (locate)	
			Are there new safety rules adopted in the company since you were on the course?			■			
			Where new safety rules have been implemented by your company after your training, did your training influence their adoption?			■			
			Are there safety / good practice document(s) available where they weren't previously?			■			
Alignment	Internationally recognised and accredited training courses		Map each course in portfolio against focus and safety impact				■		
		Career tracking via Foundation alumni programme	Provide opportunity to scholars when LRF alumni programme up and running			(■)	■		
			Case studies			■	■		
		Increase proportion of engineers and technicians from recognisably disadvantaged and under-represented groups	Gender	■					
			Age	■					
			Address (region)	■					
			Benchmark in target countries: - Number of women in engineering/ welding - % trained to international standard						■
		In employment (in the discipline of the course)	■ *			■ *			

Category	Outputs	Outcome indicators	Question / Activity	Source				
				Application Form	Evaluation Form	Post-course questionnaire	Create	Source (locate)
		Accident and incidence statistics	Any safety incidences at your place of work that resulted in injury of harm? What changes were implemented (if any) as a consequence?		■	■		
			Reliable statistics regarding accident and incidence statistics in target countries					■
			Is there a system in your company that records incidents and accidents in your company?		■	■		
		Does your company publish accident and/or incident data?		■	■			
	Robust evaluation Plan		South East Asia Skills Enhancement Programme (SEASEP) – Evaluation Plan				■	
Sustainability	On-line learning resources		Building course portfolio: - on-line				■	
			- translations				■	
			- new delivery models				■	
	Workshop and seminars		- workshops / seminars				■	
		Programmes that continue beyond Foundation funding	Investment into the programme beyond Foundation funding				■	
	Impact of programme to TWI's future business:					■		

Category	Outputs	Outcome indicators	Question / Activity	Source				
				Application Form	Evaluation Form	Post-course questionnaire	Create	Source (locate)
			- marketing approaches				■	
			- Conversations with key stakeholders (Industry, Regulators, etc.)					■
			- Influence					
			Locating evidence of industrial standard adoption in target country and market					■ **
Leverage	Leveraged funding		Track third party investment into or aligned with SEASEP (£ and in-kind)				■	
			TWI investment beyond existing capabilities				■	
			Influence industrial boards by - Attending meetings with them - Attending workshops with them				■	
			Evidence of 'brand enhancement' i.e. utilisation of logos of influential stakeholders					■

APPENDIX B

Result of recent post course surveys

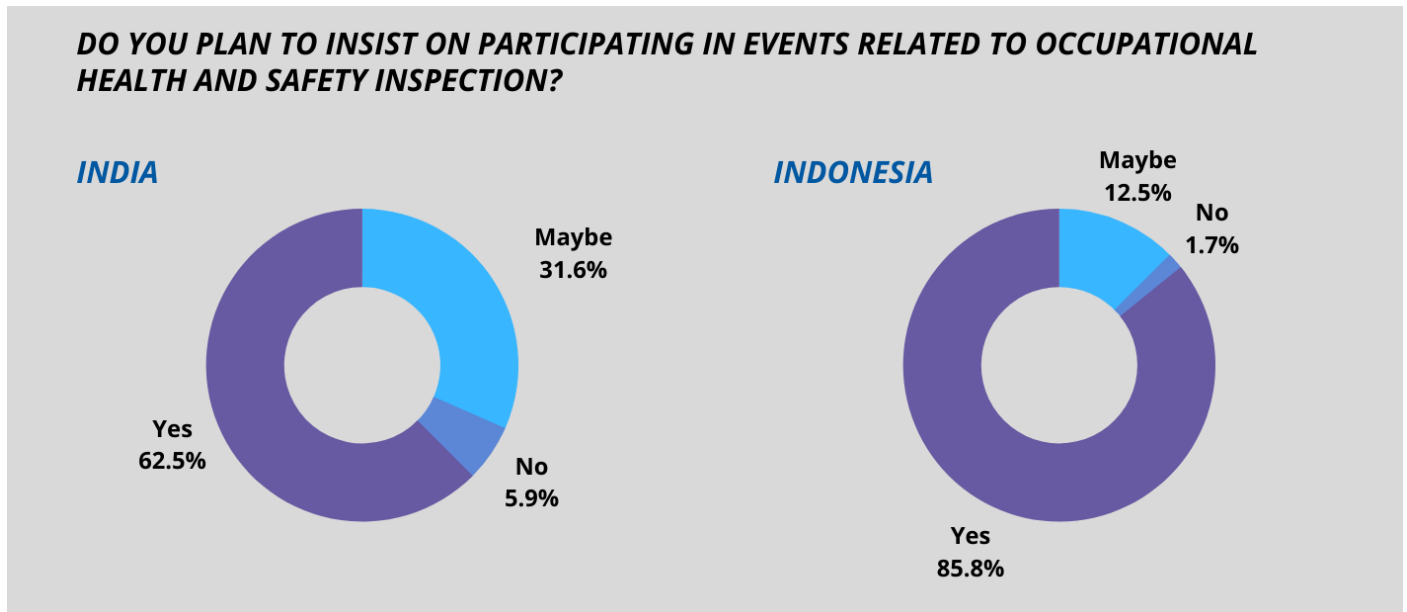
B.1 Coverage

The following data were gathered from a total of 932 students who attended courses via SEASEP, comprising 389 students from India and 543 students from Indonesia. The questionnaire was sent via dot mailer and the Indonesian questionnaire was translated into Bahasa, the native Indonesian language. 3.9% of the Indian students and 8.7% of the Indonesian students identified themselves as unemployed, which provides an ongoing bench mark for improvements in employability resulting from attending the SEASEP courses.

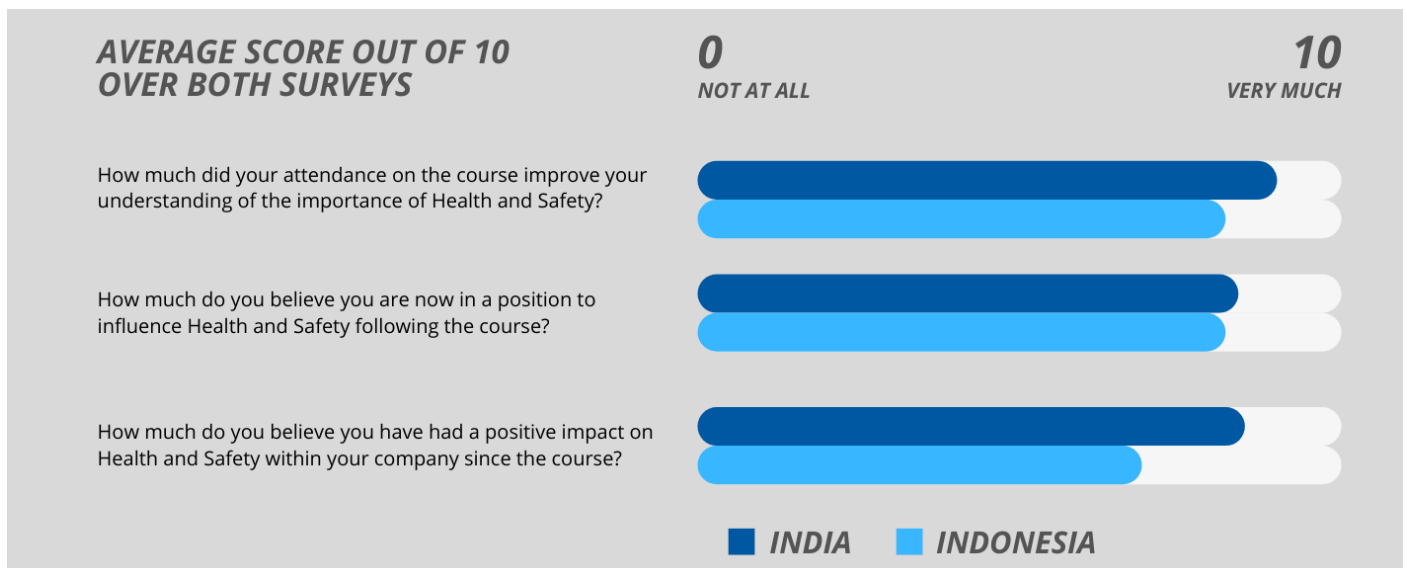
The results are grouped below according to the categories and outcome indicators in the Evaluation Plan (Appendix A).

B.2 Competency

B.2.1 Competent and safe personnel



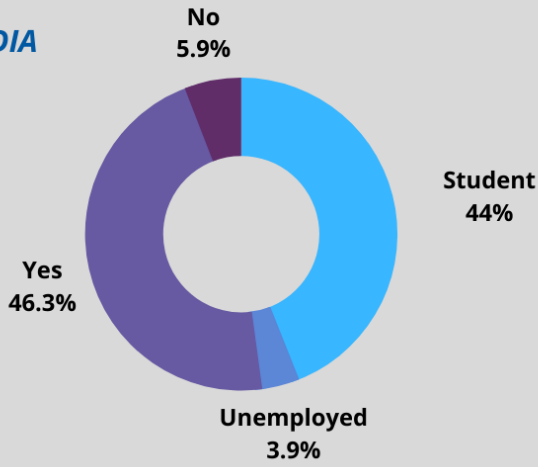
The following questions were scored out of 10 from each individual as appropriate, the chart below representing the average response across the 543 Indonesian students and the 389 Indian students.



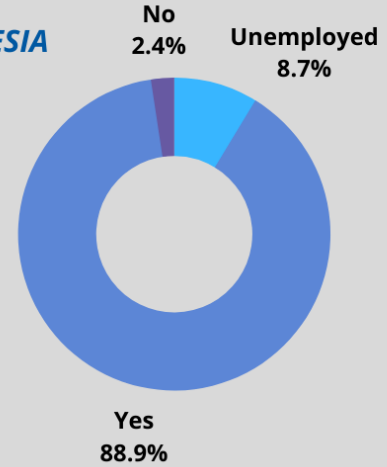
B.2.2 Increase in number of employed engineers and technicians / higher employment

DOES YOUR EMPLOYMENT DIRECTLY RELATE TO THE COURSE YOU ATTENDED?

INDIA



INDONESIA



DID YOU FIND THE COURSE USEFUL IN GAINING EMPLOYMENT INTEREST WITHIN YOUR REGION?

INDIA



INDONESIA



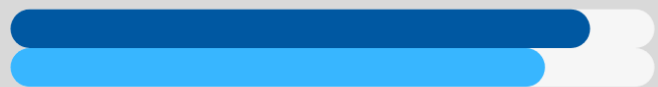
The following questions were again scored out of 10 from each individual as appropriate, the chart below representing the average response across the 543 Indonesian students and the 389 Indian students:

AVERAGE SCORE OUT OF 10 OVER BOTH SURVEYS

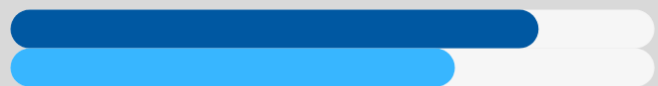
0
NOT AT ALL

10
VERY MUCH

Did the course help you plan your future employment activity?



How much do you believe, as a result of your attendance on training course, you may achieve a more senior role within your company?

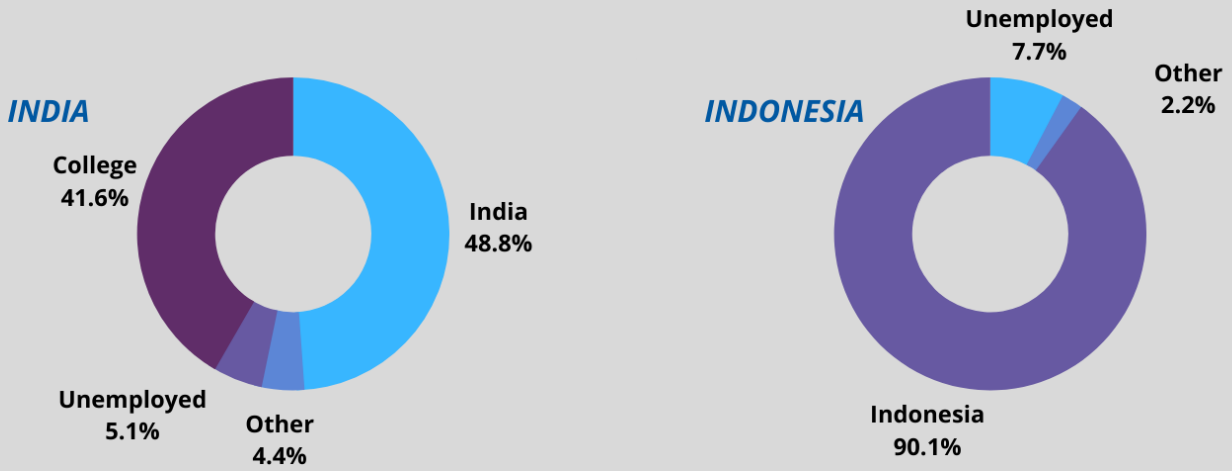


■ INDIA ■ INDONESIA

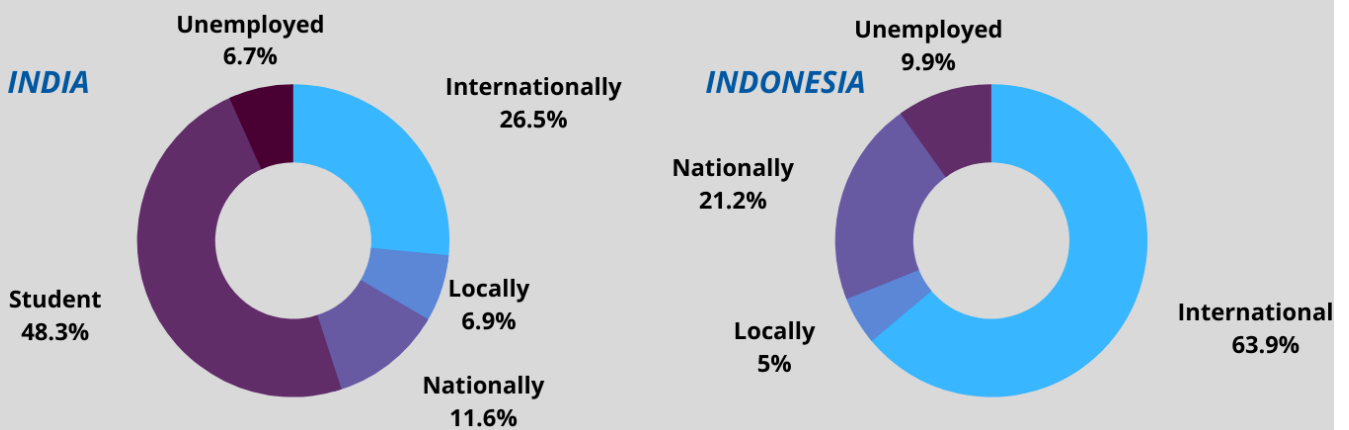
B.2.3 More local industry adopting globally-recognised new/improved standards for safety

Note that the Evaluation Plan links this outcome indicator to Alignment (Section B.3) as well as Competency (Section B.2).

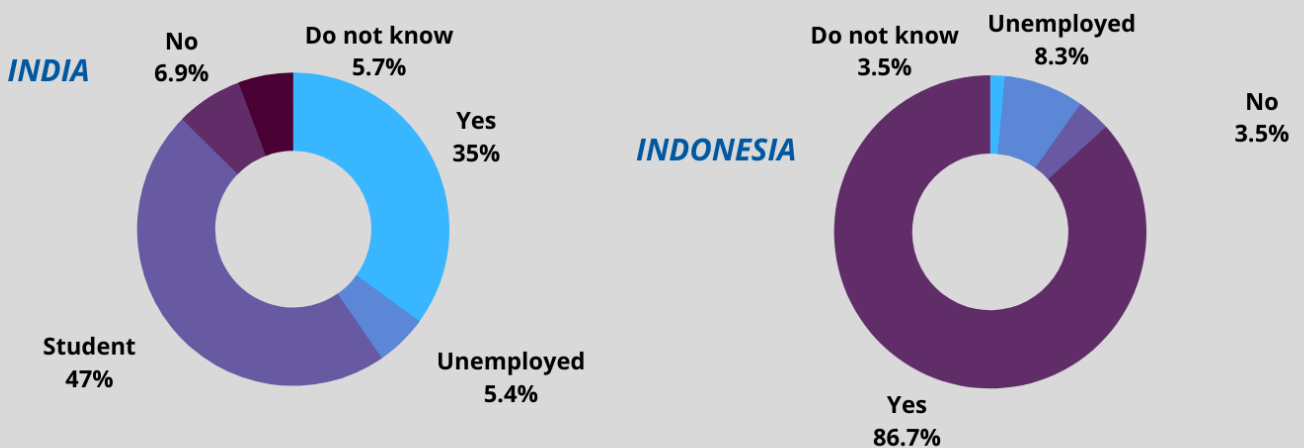
WHICH COUNTRY ARE YOU EMPLOYED IN?



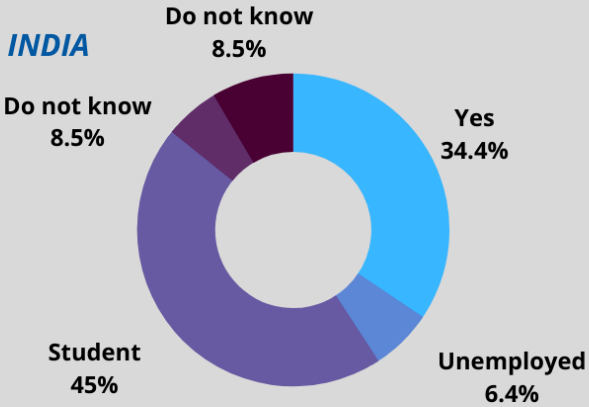
DOES YOUR COMPANY OPERATE LOCALLY, NATIONALLY OR INTERNATIONALLY?



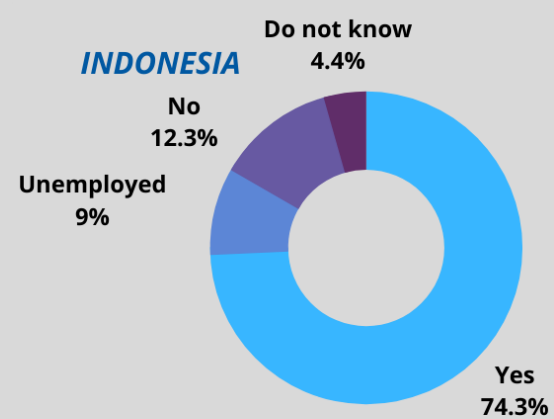
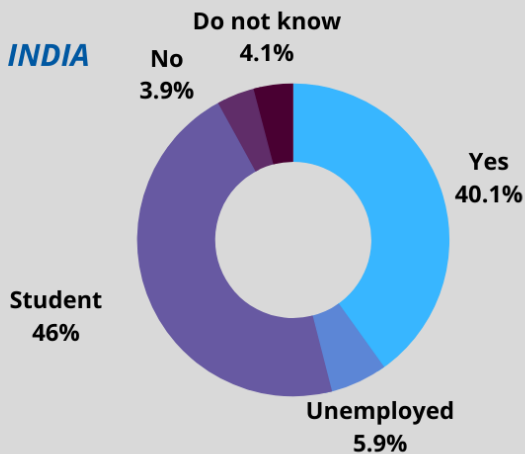
DOES YOUR COMPANY DEMAND THAT YOUR ROLE IS UNDERTAKEN BY A PERSON QUALIFIED TO AN INTERNATIONALLY RECOGNISED STANDARD?



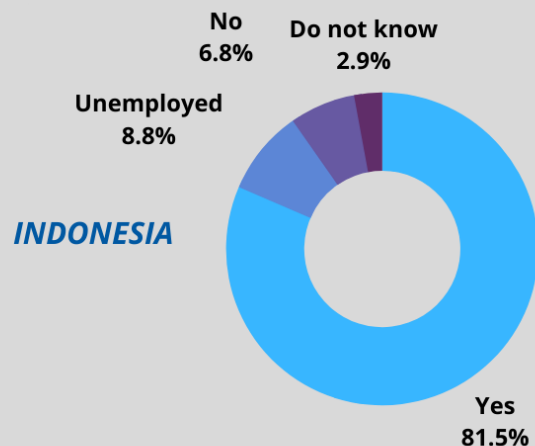
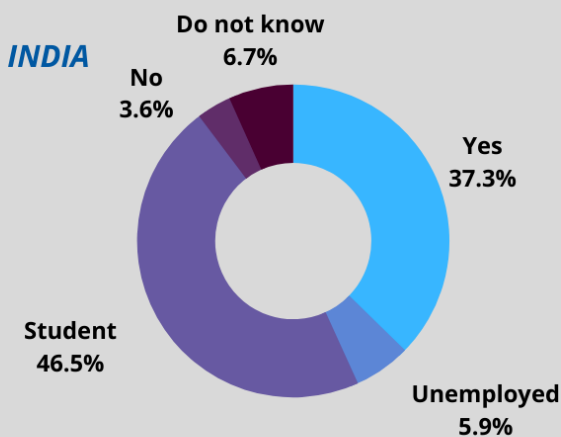
IF NEW SAFETY/INSPECTION RULES HAVE BEEN IMPLEMENTED BY YOUR COMPANY AFTER YOUR TRAINING, DID YOUR TRAINING INFLUENCE THEIR ADOPTION?



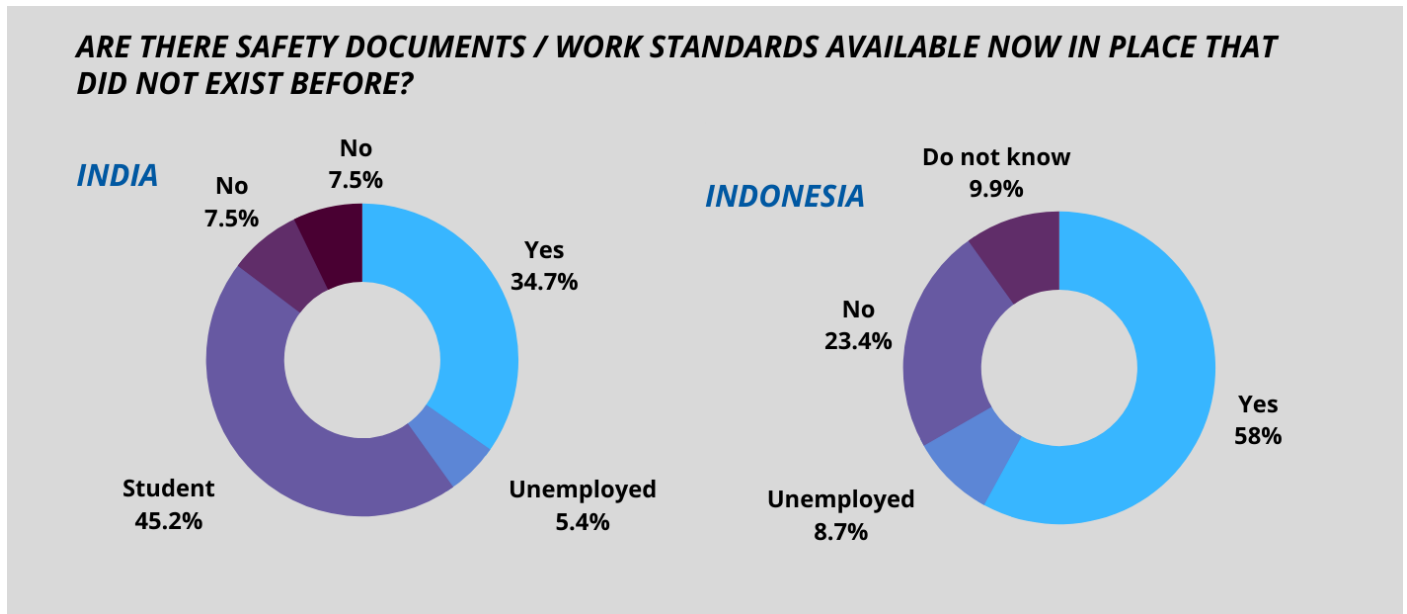
DID YOUR COMPANY INSIST ON THE RIGHT PPE EQUIPMENT AS A RESULT OF YOUR TRAINING?



IS YOUR COMPANY IN THE PROCESS OF ADOPTING FURTHER INTERNATIONAL HEALTH AND SAFETY INCLUDING INSPECTION STANDARDS?

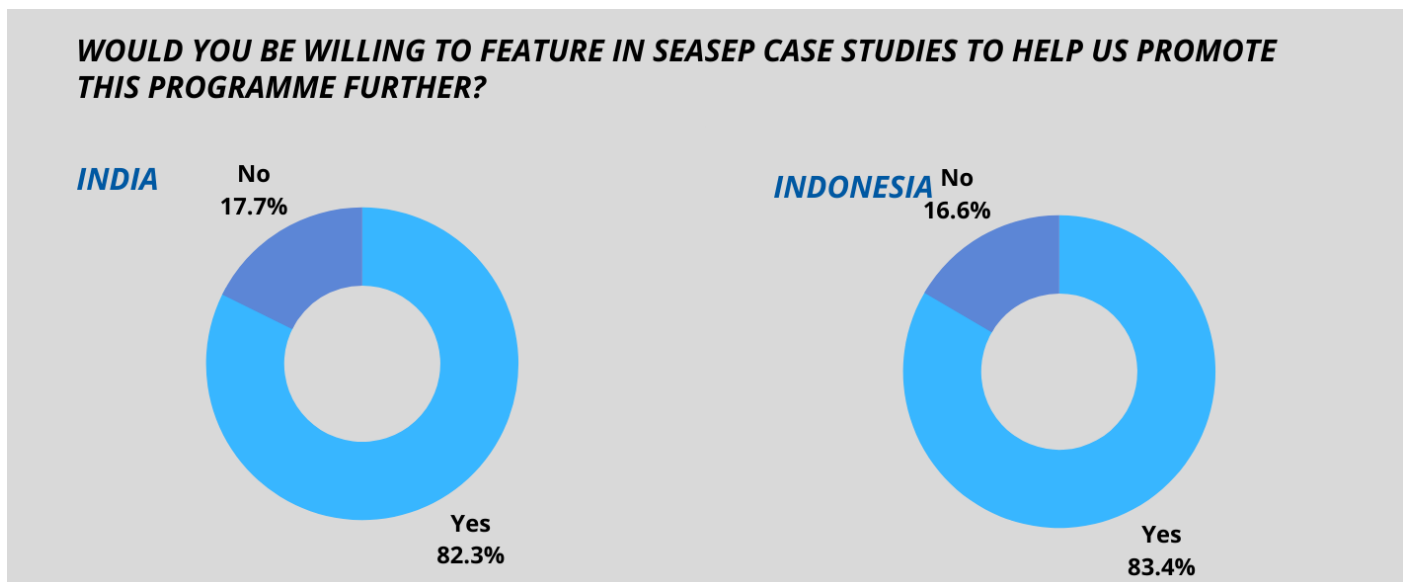


B.3 Alignment



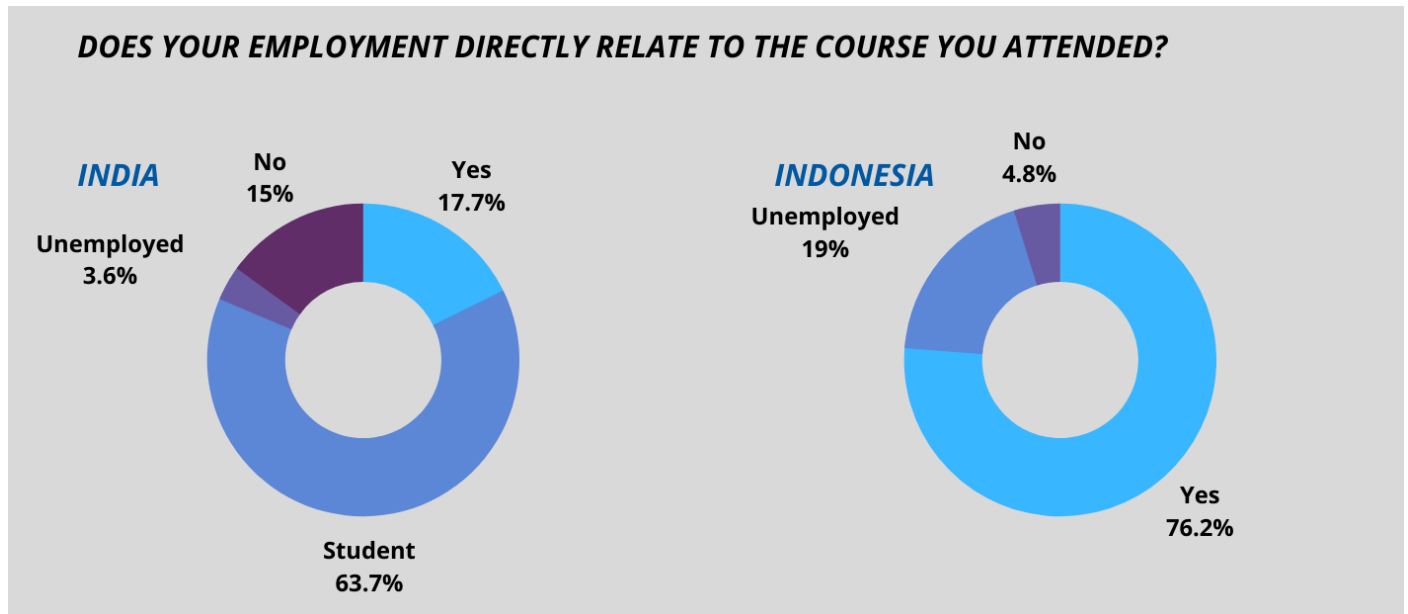
B.3.1 Career tracking via Foundation alumni programme

Note that the Evaluation Plan links this outcome indicator to Alignment (Section B.3) as well as Competency (Section B.2).



B.3.2 Increase proportion of engineers and technicians from recognisably disadvantaged and under-represented groups

The following chart presents responses from female scholars to one of the questions already considered in Appendix B.2.2.



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